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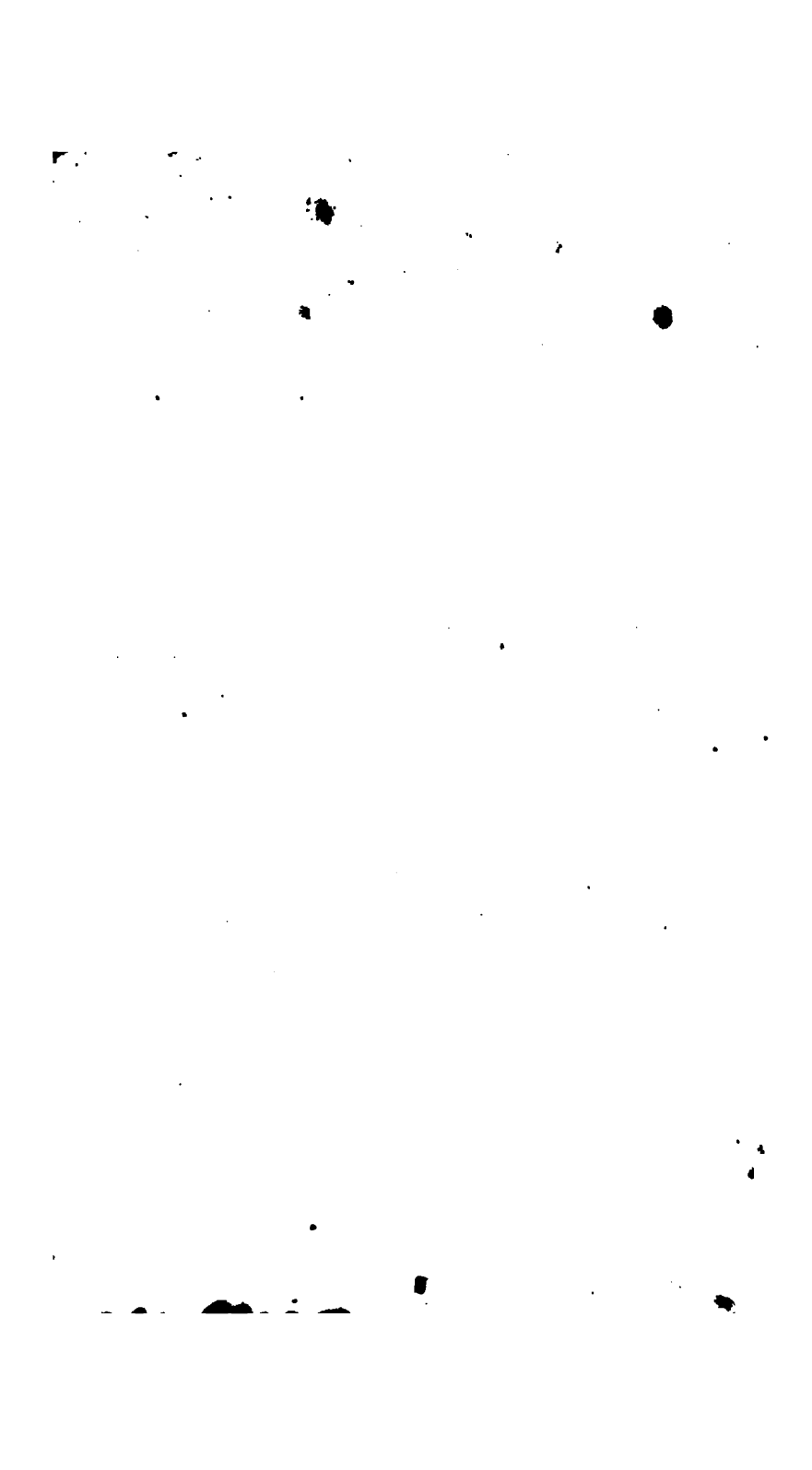


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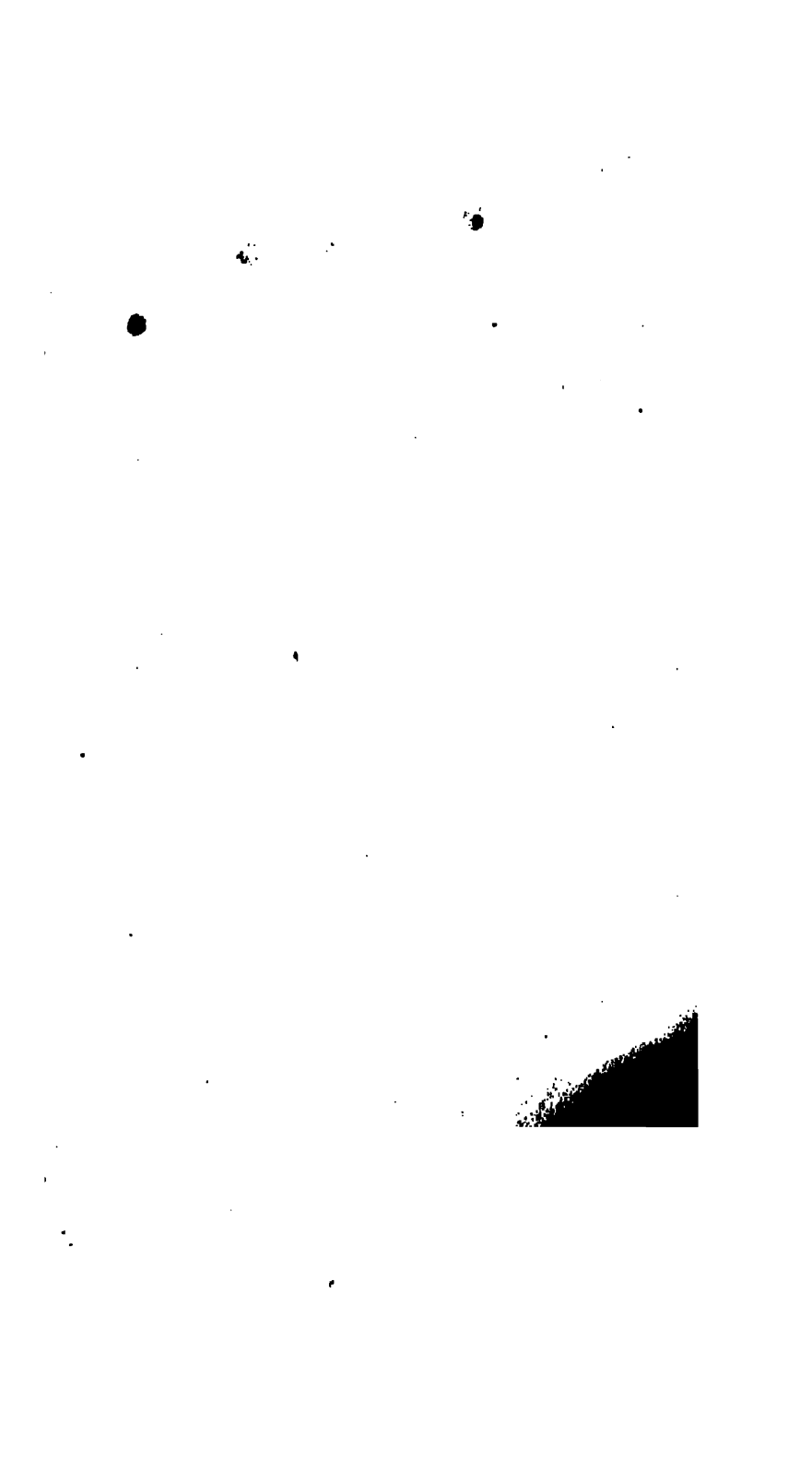


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PATENTS FOR INVENTIONS.

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ABRIDGMENTS

OF

Specifications

RELATING TO

GRINDING GRAIN AND DRESSING  
FLOUR AND MEAL.

---

A.D. 1623-1866.

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PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.

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## PREFACE.

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THE Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embrace several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering, therefore, the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions will, from time to time, become apparent and be supplied in future editions.

This volume contains Abridgments of Specifications to the end of the year 1866. From that date the Abridgments will be found in chronological order in the "Chronological and Descriptive Index" (see List of Works at the end of this book). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the reader (by the aid of the Subject-matter Index for each year) can continue his examination of the Abridgments relating to the subject of his search in the Chronological and Descriptive Index.

The inventions selected to form this series of Abridgments principally comprise the construction of and mode of working the various kinds of mills and machines employed for grinding corn and other seeds; hulling grain; hulling and polishing rice; bolting flour and meal; crushing oats for oatmeal; preparing pearl barley; and the manufacture and dressing of millstones. The motive power engines (steam engines, water wheels, and windmills) employed for driving the mills and machines are not included, excepting only in cases where special applications of the driving power are described. These classes of inventions will be found in the several series of Abridgments entitled respectively "The Steam Engine;" "Hydraulics;" and "Air, Gas, and other Motive Power Engines."

The following subjects have, been excluded, viz., granaries and methods of storing grain; cleaning grain; treating damaged grain; bruising oats for horse and cattle food; and cleaning seeds for sowing. They will be found in the series of Abridgments relating to "Agriculture," Part II., now in course of preparation. For inventions relating to crushing seeds for the extraction of oil reference should be made to "Oils, Fats, Lubricants, Candles, and Soap."

H. READER LACK.

*June, 1876.*

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## INTRODUCTION.

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THERE are fewer titles given to books of this class more suggestive or calculated to excite the mind to deeper reflection, than the two leading words "Grinding Grain" at the head of the pages of this volume, and in endeavouring to trace their meaning to its origin, the imagination is carried back to the remotest depths of past ages, to a period possibly nearly coeval with the time when the Creator "breathed into the nostrils of man the breath of life, and he became a living soul;" there is nothing visionary in the idea that in the earliest period of his existence man broke up and bruised the seeds which, to support the life thus mysteriously called into existence, were, we are told (Gen. i.v. 29.), given to him for meat, "every herb bearing seed, and the fruit of every tree yielding seed;" there was seed time and harvest, summer and winter, and the surplus of the seed that was gathered in the harvest time was garnered for the winter store.

We may therefore readily conceive that (probably during the primeval period of his history) the natural ingenuity of man led him to contrive some device, whereby the process of reducing grain to a state more or less resembling what in the present day is known as meal, could be effected, and that it became a frequent occupation in the families of the antediluvian fathers; and doubtless the means employed by them for the purpose, although in all probability of the rudest description, nevertheless had the desired effect of pounding or breaking up the grain into particles more or less minute.

By degrees, however, a certain form of pounding or grating surface seems to have obtained a preference, and this appears to have been a scooped-out surface of hard wood, whereon when the grain was placed, it was rubbed, broken, and pounded by the end of a block or trunk, also of wood. In course of time this primitive contrivance assumed a more definite form, the length of the pounding block was extended by the addition of a staff or handle, the concavity of the



surface was increased, and at length an apparatus similar in many respects to the pestle and mortar of modern times was produced and generally employed. This in succeeding years was improved by increasing the size and weight of the pestle or block, and by affixing a handle thereto whereby it could be circulated round the inside of the mortar whilst its weight rested upon the grain.

Such appears from the writings of early commentators to have been the kind of instrument that was in use in the days of the ancient Hebrews for decorticating and rough grinding, but they possibly had for producing the finer kinds of meal some more effective contrivance, for it is evident that different qualities were produced, as may be gathered from the Mosaic records, which clearly show that the patriarch Abraham really did possess the means of reducing grain to fine meal, for he clearly distinguishes the quality when he gave orders for the preparation of a feast for his guests, as he expressly directs his wife Sarah (Gen. c. 18. v. 6.) to "make ready quickly three measures of fine meal, knead it, and make cakes upon the hearth.

That two kinds of grinding apparatus were in use is confirmed subsequently by the passage in the Book of Numbers (Chap. 11. v. 7, 8, & 9.) where it is stated that when the people of Israel were encamping in that sterile county through which Moses was compelled to lead them in search of the promised land, and they were being fed with manna "that fell upon the camp" "and was as coriander seed, . . . "the people went about and gathered it, and ground it in "mills or beat it in a mortar, and baked it in pans and made "cakes of it." There is reason to believe that most of these ancient Israelitish families possessed some description of grinding mill as a necessary part of their household effects for Moses commands (Deut. c. 24. v. 6.) that "No man shall take the nether or the upper millstone to pledge, for he taketh a man's life to pledge." "Machaelis" on this passage observes, that a man could not then grind, and consequently could not bake bread for the daily use of his family.

It appears that in course of time, the mortar was made rigid and the pestle notched at the bottom, by which means the grain was rather grated than pounded, a conjecture made *probable* by a passage in the works of Pliny. Such a mill

according to Mr. Beckmann, was called *mola trusatilis, versatilis, manuaris*. Grinding was at first the employment of women as a part of their daily occupation, and particularly of the female slaves, as it is at present among uncivilized nations; but when an increase of strength in the operation was required bondsmen were employed; and subsequently the power of asses, cattle, and horses was applied to work mills of increased size.

The ancients preparatory to grinding exposed their grain to heat, whereby it was rendered brittle, and the husk was afterwards more capable of being rubbed off in the mortars employed for the purpose. Such was the method practised by the ancient Romans, particularly with that kind of grain to which the husk adhered too firmly to be removed by simple rubbing. But the ground product, having been made brittle by exposure to a high degree of heat, would not afterwards be susceptible of fermentation, and therefore the bread made from it was a kind of unleavened cake or biscuit.

The Etrurians scored or furrowed the inside of their mortars, grooved the bottom radially and gave to them a more cylindrical form; and the lower end of the pestle was roughened. The pestle was maintained in a central position by an iron spike projecting from its lower end, and entering a hole in the centre of the mortar, and the pestle was caused to rotate on its vertical axis by means of a handle projecting laterally therefrom. If the corn machines in the latter times of the Roman Republic, and during the reign of the first emperors were of the same form as those found at Pompeii, it is evident they differed from those in the east, and were similar to the Etruscan mill placed in an inverse position; the pestle being an upright column of stone fixed in the ground, had its upper end shaped like the frustum of a cone, over which the mortar (also coniform internally) was inverted, the angle of the conical side of each differing relatively, so as to form between them an annular space at top, whilst towards their lower edges their grinding surfaces gradually came into contact; a funnel-shaped feeding hopper was placed over a central hole in the outer cone, and to the top of the latter the horizontal driving beam at its midlength was fixed, the cattle employed to turn the mill being secured to its projecting ends.

The ancient Jewish people seem never to have employed *any other kind than hand mills*, and even at the present time



the Arabians and people of Syria, although using cattle and water mills in some of their largest towns, generally retain the old custom of grinding their corn at home. The work was usually performed by females, either members of the family or slaves, sometimes by one alone, but often by two females, who seated themselves on the ground at opposite sides of the mill, and each grasping the handle with one hand, by alternately pushing and pulling kept up the rotation of the running stone, and with the other hand they fed in the grain.

Dr. Smith\* suggests that the mills proper of the ancient Hebrews probably differed but little from those at present in use in the East. These he states consist of two circular stones, the lower being fixed has its upper surface made convex to fit into a corresponding concavity of the upper stone, which has a central feeding hole through which the grain passes to the grinding surfaces. These mills are worked by females. The hand mills of the ancient Egyptians also appear to have been of similar construction, and were likewise worked by women, but for turning mills of larger dimensions asses or cattle were employed.

The remains of a pair of old Roman millstones were found at the beginning of the last century at Adel in Yorkshire, a description whereof was given by "Thornsby," in the *Philosophical Transactions*. One of the stones 20 inches in diameter was convex, being thicker in the middle than at the edge, and the other had the additional thickness at the edge; some traces of notching were also discernible.

In the East India Museum there is a hand mill similar in form and construction to the Oriental mills, and we are told that such mills are in use in India at the present day.

A similar hand mill was for many centuries commonly employed in the British Isles. It was called the "Quern," and might possibly have been introduced by the Phœnicians or by those tribes who first brought into this country the arts of agriculture. The use of this mill was continued in the western parts of Scotland until the early part of the present century.

It is not known to whom the invention of water mills for grinding grain is due. "Strabo," in an obscure passage, seems to refer to one set up near the residence of "Mithri-

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\* Bible Dictionary, vol. 2.

"dates." There is however satisfactory evidence to prove that a corn mill driven by water was constructed at Rome soon after the conquest of Mithridates by Pompey. We are informed by Pomponius Sabinus, that the first corn mill seen in Rome was erected on the Tiber prior to the time of Augustus, but the most reliable proof that Rome had water mills in his reign comes from Vitruvius, and is confirmed by the charming epigram of Antipater, who Salmasius asserts lived in the time of Cicero. "Cease your work ye maids who laboured in the mill, sleep now and let the birds sing to the ruddy morning, for Ceres has commanded the water nymphs to perform your task; these, obedient to her call, throw themselves on the wheel, force round the axle-tree, and by this means the heavy mill."

Palladius also speaks with equal clearness of water mills, which he advises to be built near running water. But cattle mills continued in use long after the time of Augustus. When Caligula, 23 years afterwards, took away from the mills the horses and cattle to transport the effects and spoils of every kind which he had seized, there arose a scarcity of bread in Rome; and from this circumstance Beroaldus justly infers, that the water mills at that period must have numbered but very few; in fact, their introduction into general use seems to have been the work of generations, for three centuries after the time of Augustus the cattle mills at Rome then amounted to as many as 300. The jurist Paulus, who lived A.D. 240, mentions *asina malendaria* and *mola*, a mill-ass and a mill.

At the beginning of the sixth century, however, the water mills appear to have superseded the use of cattle mills, for it is recorded that when Vitiges, king of the Goths, besieged Belisarius in Rome, the water supplies to the aqueducts were cut off by the besiegers, and the mills were stopped for want of water, for horses and cattle to drive them were not to be found. But Belisarius, who was a man of great ingenuity, devised a remedy. Below the bridge which reaches to the walls of Janiculum he extended ropes, well secured, and reaching across the river from side to side. To these he affixed boats, wherein he placed grinding mills, and between the boats a machine or paddle wheel, which was caused to rotate by the swiftness and pressure of the current, and by this ingenious contrivance the mills were turned, and the distress

which the want of properly prepared food was causing in Rome to many thousands of her inhabitants was, by the happy thought of one skilful mind, fortunately removed. Henceforward water mills both floating and stationary came into general use, and accounts of them from time to time are to be met with in the legal and other records of most civilized nations.

Private families and establishments, however, retained their hand and cattle mills long after the general introduction of water mills. We read in the life of St. Benedict, that he had a mill and an ass wherewith to grind corn for himself and his colleagues. Small mills remained and were used in the convents by the ecclesiastics, who ground the corn with which their bread was made. Sulpicius Severus gives an account of the mode of living of an eastern monk in the beginning of the fifth century, and expressly states that he ground his own corn, and Gregory, of Tours, mentions an abbot who eased his monks of their labour at the hand mill by erecting a water mill.

Although Pomponius Sabinus affirms that the Romans had wind mills, there exists no evidence to prove it, and modern writers believe it to be very improbable. Vitruvius, when he enumerates the moving forces, mentions the wind, but he does not say one word about wind mills, nor are they noted by either Seneca or Chrysostom, who have both remarked on the advantages of the wind. Where such mills were invented is not known, but it is thought that when the crusaders returned from the wars, as they brought with them, many useful implements, and were able to describe many useful appliances and contrivances seen in distant lands, that possibly in this way the adaptation of wind mills to grinding purposes came to be known in western countries.

It is highly probable that in the early ages men were satisfied with only grinding their corn, and possibly in some way they were able to sift from it the coarsest particles. But there is no evidence to show that different qualities of flour were obtained from the same meal or ground product by what is now called bolting, or by any other similar means. This process is said to have been invented by a master baker named Nicholas Boller or Bolter, of Zwickau in Saxony, who first *employed sieves* of special make for the purpose. The manu-

facture of bolting cloths is now an important branch of commerce in which the English makers excel.

The separation from the bran of the flour which was left adhering to it after the process of bolting was an important discovery, and many persons in France, where it took place, and was kept secret for many years, by practising it were able to obtain a large additional per-centage of flour from a given quantity of grain.

Thus have we been able to furnish a brief outline of this interesting subject ; the materials, though scant, link themselves and appear together like the distant objects of a landscape, and although between each many centuries of time and the lives of thousands of eminent men have passed away for ever, it has, whilst tracing it, brought us down from the obscure distance of the remotest ages of the past to the foreground of more modern times, when the seed of general intelligence began to be sown broadcast, and the mechanical arts came to be more generally studied and practised.

Henceforward the subject may be continued by a perusal of the following pages, wherein will be found brief accounts of the efforts that have been made by inventors in a variety of ways to improve the different processes more or less connected with the art of grinding grain.

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"to hire of a new form of mills for the grindinge of corn, &c.," is not described in the Letters Patent, which state, that George Manby was the inventor, and that the Letters Patent were granted on condition the patentees paid an annual royalty into the Exchequer, the grant to become "voide in case it shal be found pjudiciall."

[No Specification enrolled.]

A.D. 1662, October 31.—No. 133.

BURNEBY, EUSTACE.—This invention relates to "the makeing and preparing of barley of the growth of these our kingdomes according to the art and manner of that sort of barley commonly called by the name of French barley and pearle barley." The petition for the grant of these Letters Patent was supported by the certificates of the "Colledge of Phisitians, and severall druggests, grocers, and apothecaries," to the effect that the manufacture at that time of "pearle barley" in England, was new. The Letters Patent included England, Scotland, Ireland, and Wales and conferred the exclusive right of making and preparing pearle barley after the art or method of preparing the barley known as French barley, from barley grown in either of the above realms. The particular process is not described.

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1670, February 3.—No. 159.

BURNEBY, EUSTACE.—This invention relates to the "art mistery and skill of husbanding, ordering and ppareing of rice and safflower," the knowledge of which art and mystery was obtained at the sole cost and by the industry of the patentee in "Alsatia and other partes abroad" and to whom the Letters Patent were granted by reason (as stated) of the willingness of the government "to cherish and encourage all laudable endeavors and designes of such our subject<sup>e</sup> as shall finde out or introduce into these our kingdomes vsefull and profitable art<sup>e</sup> and invençons, by granting, & appropriateing vnto them for some terme of yeares the fruit and benefitt of their industry, whereby their labours and expences in the attainm<sup>t</sup> thereof may be recompenced & rewarded." The details of the process are not described.

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1677, February 14.—No. 195.

MILSON, CHARLES.—This invention of “a certaine engine or mill for the hulling of black pepper and barley” was found out “with greate labour and expence” by Edward Nelthorpe who represented in his petition that the invention “was never yet used by any but himselfe,” and he humbly besought to have the grant of Letters Patent made to himself or to any other person he might nominate. In accordance with the prayer of the inventor the exclusive right of using, exercising, and enjoying the invention and the profits arising therefrom for the term of fourteen years were “for the reason aforesaid, and alsoe for divers other good causes and consideracons,” granted to Charles Milson, who appears ostensibly as the patentee.

The engine or mill is not described in detail.

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1686, June 25.—No. 250.

FINCH, JOHN, NEWCOMBE, JOHN, and BUTLER, JAMES.—This is an invention of “a woven-wyere engine,” most advantageous (as stated in the preamble of the Letters Patent) “for the use of bakers, millers, mealemen, garblers, glassmen, and such professions, for the bolting, dressing, sifting, and cleansing of meale to any degree of finenesse, and for cleaning of dust or drosse from all spices or metall<sup>e</sup>, farr beyond any wayes or meanes heretofore used or practised, nor never yet knowne in this our kingdome of England; the advantage whereof will be great to severall of our subjects, as smiths, turners, weavers, wiredrawers, &c., and instead of vseing forreigne manufactory for the vses aforessaid will settle a manufactory in this our kingdome.” The invention which appears to have been a kind of riddle or sieve, is not farther described.

[No Specification enrolled. Letters Patent printed, 4d.]

A.D. 1717, March 8.—No. 412.

THOMPSON, JOHN.—This invention relates to what is termed, “a floating engine or machine for grinding corn and bolting the flower by force of water in any of our rivers.” It appears according to the representations and prayer of the



patentee in his petition for a grant of Letters Patent, that he was not himself the inventor of the machine but that he being a London merchant, did at "great paines and expenses," procure and bring a model of it to this country from "beyond the seas;" and in consideration thereof, and that in its construction it differed from any machine antecedently used here, and was likely to be of "publick use and benefit," the Letters Patent were granted to him. The parts of the machine are not described in detail.

[No Specification enrolled. Letters Patent printed, 4*d*.]

A.D. 1753, January 24.—No. 675.

WILKINSON, ISAAC.—This invention is described as "a new sort of cast metallick rolls for the crushing, flattening, bruising or grinding of malt, oats, beans, or any kind of grain; and also for crushing, bruising or grinding of sugar canes." These rolls are cast in moulds of either sand, loam, or other material or composition, and either with or without a circle of teeth or cogs around one end. The axis, which is centrally supported by four radiating arms or spokes, is together with the spokes cast in one piece with the rolls, which are in consequence hollow, the metal being melted and poured into the mould in the usual manner. The moulds "invented and prepared for the purpose" are not further described, but two rolls geared together in relatively parallel position, are shown on the drawing.

[Printed, 6*d*. Drawing. See Rolls Chapel Reports, 6th Report, p. 127.]

A.D. 1765, May 10.—No. 827.

MILNE, JOHN.—This invention is entitled "a new-invented machine for dressing the flour of wheat and barley, &c., which will make a more lively and better flour than bolting cloths (which is the common method now used) from the same corn; it will dress all sorts of flour, and divide the sharps from the bran at one operation, and the person that attends it may easily make two sorts or only one by moving the partitions that divide the flour, which must be within the box or case in which the machine works, and as flour is an article that loses every time it is stirred, &c., it evidently appears that it dresses with less loss, because it does that

“ business at one operation which to be done with cloths in  
 “ the common method now used requires several operations  
 “ and several different cloths and the trouble of changing  
 “ them, they being obliged to change their cloths for different  
 “ sorts.”

The mechanism as described, consists of a kind of skeleton cylinder about 6 feet long, and 16 inches in diameter, lined with wire gauze or cloth of different degrees of fineness, the finest gauze or cloth being at one end, the medium in the centre and the coarsest at the other end. In some cases the cylinder, which is disposed in a suitable box or chamber, is made to rotate, but it is generally a fixture in the box, placed either in a diagonal or a horizontal position. Passing through the centre of the cylinder is a spindle or shaft which, by means of a pulley or otherwise, is caused to rotate in suitable independent bearings, and on this spindle, arranged spirally or otherwise, are brushes, so fixed as to project radially into frictional contact with the wire-work or the cloth lining of the cylinder. The flour which is to be dressed is conveyed into the upper or finest end of the cylinder by means of a hopper, and by the rotary motion of the spindle it is gradually worked towards the other end. The finest flour sifting through first, is kept by a partition in the box separate from the next quality, which passes through the wire or cloth of the second degree of fineness, and so on till nothing is left but the bran, which falls out of the opposite or lowest end of the cylinder.

[Printed, 6d. Drawing. See Rolls Chapel Reports, 6th Report, p. 159.]

A.D. 1767, December 24.—No. 889.

**HAYNE, RICHARD.**—This invention relates to the construction of a mill adapted as a motor to the grinding of corn and applicable to other purposes, the motion being continuous, is (it is stated) obtained by the action of “fire or air” upon one or more sets of flyers or sails; it is described as follows:—

“ For the grinding of wheat, corn, or any other grain or  
 “ materials, a pair of millstones of a convenient size are fixed  
 “ upon a post or frame, with a spindle and rind in the usual  
 “ manner, with a barrel or turntree under the stones, and a  
 “ cog wheel fixed upon it; a windlass at either end of the  
 “ barrel. Upon the spindle just below the stones is fixed

“ another wheel filled with either coggs or rounds to work  
“ with the cogg wheel fixed upon the barrel. Upon the rind or  
“ upper stone is fixed a long rod or spindle which goes up  
“ into a funnel or chimney, and upon this rod are placed one  
“ or more set or sets of flyers or sails, one set above another,  
“ or after the manner of a screw or worm, according to the  
“ strength required. In this case the hopper is fixed as in  
“ common cases, or to the chimney, with a shoe moved as usual  
“ by the rod fixed upon the rind. At the bottom of the  
“ chimney is a fireplace, which, being supplied with fuel and  
“ lighted, the set or sets of flyers (by the assistance of a hand  
“ applied to the windlass) will turn and put in motion and  
“ work the machine.”

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 135.]

A.D. 1768, October 6.—No. 903.

FREETH, SAMPSON and FREETH, SAMUEL.—This is an invention of a hand-mill adapted to the grinding of corn. The mill when fixed for work is attached to an upright post or column. The corn is introduced into a hopper superposed upon and communicating by means of a tube with the grinding chamber, into which it gravitates as the grinding progresses. The grinding chamber is a hollow horizontal chamber slightly tapering internally from one end to the other. The grinding roller tapers in the same degree as the cylinder, in which it is fitted to revolve on its axis, the ends whereof project therefrom. One end of the axis carries a spur wheel which is fixed thereon, and the other end is operated upon by a regulating screw, by the aid of which the position of the roller can be adjusted longitudinally in the cylinder, and by this means the distance apart of the grinding surfaces, viz., the interior of the cylinder and the exterior of the roller, is regulated. The grinding surfaces are cut with serrated teeth, fine at one end of the cylinder and roller respectively, and gradually coarser towards their other ends, where the grain is first received from the hopper and broken, and it is gradually ground into meal as it passes through to the other or fine end, where it escapes through a down spout. The spur wheel on the axis of the grinding roller is actuated by a pinion fixed on a horizontal shaft fitted to turn in suitable bearings beneath. This shaft

carries a fly wheel on one, its back end, and on its front end there is fixed a winch handle by means of which the necessary rotary motion is imparted to the grinding roller.

[Printed, 8d. Drawing. See Rolls Chapel Reports, 6th Report, p. 169.]

A.D. 1770, October 13.—No. 968.

MILNE, JOHN.—This invention relates to a machine for dressing wheat, barley, and other grain before being ground; to another machine for dressing and separating the different qualities of flour from the pollard and bran subsequent to the grinding process; and to a machine for dressing meal. It is supplementary to a former invention, Letters Patent for which, bearing date May 10, 1765, No. 827, were granted to this inventor. In addition to the fixed cylindrical wire sieves with brushes mounted on a revolving axis, as therein described, and repeated in the specification of the present invention, the inventor employs semi-cylindrical sieves about six feet long, and sixteen inches in diameter. These semi-cylinders are made of woven wire or cloth upon skeleton frames, which instead of being fixed, as in the wire cylinder of the former invention, are caused to rock on their axes, and the brushes which project from a fixed axis, are immovable. These sieves or apparatus are to be placed aslant to receive in some cases the meal as it is ground, and they are to be worked by the mill power. The wire-work shell is composed or divided into sections of different degrees of fineness, the coarsest being at the lower, and the finest at the upper end, where the meal is received from the grinding mill. These semi-cylindrical sieves are placed over a box suitably provided with transverse partitions respectively corresponding with the junctions of the different qualities of wire work, so that as the meal gradually gravitates down the sieves, the brushes rub the finest flour through the upper section, the seconds quality through the next, and the coarsest the next, leaving the bran which is discharged at the lower end.

The machine for dressing flour or meal of oats or barley, consists of a series of circular sieves placed one above another in a suitable frame; a motion similar to hand sifting is imparted to all the sieves simultaneously by means of a vertical crank axle, which passes down through the centre of the



sieves. To the underpart of each sieve is fixed a thin sheet metal cone inverted, so that as the meal passes through the sieves in succession, it is deposited through a hole in the apex of each cone, directly in the centre of the next sieve beneath, the cone under the lower sieve guiding the dressed meal into a hopper, which discharges it into sacks, whilst the "shudes" which naturally rise in the sieves are thrown off centrifugally.

A similar constructed wire cylinder to the one described in the specification of the former invention, is employed for dressing wheat, barley, and other grain, excepting that the wirework is made stronger and coarser, and the brushes very stiff, in order to brush the corn well and separate and throw off the smuts, seeds, and dirt, which fall through the wire work, whilst the pure corn is discharged at the lower end.

[Printed, &c. Drawing.]

A.D. 1774, November 26.—No. 1090.

WATSON, SAMUEL.—This invention relates to the construction of a duplex grinding mill. The main grinding stone is circular, the projecting ends of its axis resting in bearings mounted on a suitable frame, is turned by a winch handle or otherwise. A stationary stone having one of its surfaces hollowed to correspond with the arc of the grinding stone, is placed at one end of the frame, and capable by means of a screw of being slid towards the periphery of the grinding stone, more or less in frictional contact. The wheat or grain is supplied by means of a shoot or "lander" from a hopper, and falling between the revolving surface of the grinding stone, and the fixed surface of the stationary stone, is broken up and ground. On the opposite end of the frame, its axis resting in suitable bearings, is a crushing stone or roller, its distance from the opposite side of the grinding stone being also adjustable by means of a screw. This section of the machine is used for crushing malt, beans, oats, &c., which are supplied from above by a similar shoot and hopper. The crushing roller is turned in a direction contrary to the rotation of the main grinding stone, and both sections may be actuated either by hand, water, or other motive power.

[Printed, &c. Drawing.]

A.D. 1775, June 12.—No. 1099.

RAWLINSON, GEORGE.—This invention relates to the construction of three machines capable of being operated by hand, and respectively designed for winnowing and cleaning corn and grain, for grinding corn, grain, and other substances, and for dressing meal or other ground substance.

The winnowing and cleaning machine. In this apparatus the "bunts" are first separated from the grain and chaff by a coarse sieve that is shook by the mechanism, the grain and chaff falling from it through an air current produced by a revolving fan; the blast blows out the chaff, and the winnowed grain afterwards falls upon two shaking sieves, one being finer than the other for the purpose of separating the different qualities of grain, which are respectively conducted into different bags, that are filled to a certain weight, ascertained by a weighing apparatus or steelyard attached to the machine.

The grinding mill is furnished with a pair of grinding surfaces "cut with teeth" or dressed in a millstone form, and composed of metal and stone combined, or entirely of either of those materials. The bottom millstone is stationary, and upon the upper or running stone is fixed a crown tooth wheel, which is actuated by driving wheels that are mounted on separate axes, and engage with it at opposite sides of the machine, the outer end of each shaft being furnished with a crank handle. The grain is first crushed by rolls combined with the hopper, and the crushed material is conducted thence over a fine sieve, which separates from it the dust and seeds before the material reaches the millstones.

The dressing mill operates by means of a revolving brush, that rubs the flour from the bran through a sieve or bolting cloth, either of wire, lawn, or hair, or of all those materials combined, the chief portion of the flour being sifted or dressed as it passes from the hopper over a sieve which is shook by the mechanism, and made of similar materials. The crank handle whereby the machine is worked, is mounted on the end of the axis of the wheel that actuates the revolving brush, and the ground material becomes separated into different kinds and qualities, which fall into separate receptacles.

Instead of manual labour, both the grinding mill and the dressing mill may be worked either by horse or other motive power.

[Printed, 10*d*. Drawing.]

A.D. 1779, March 22.—No. 1214.

DEARMAN, RICHARD.—This invention relates to the grinding surfaces of mills adapted to the grinding of wheat, malt, barley, and other cereals, berries, seed, spice, and drugs. Instead of the steel mills usually employed, the grinding surfaces of similar mills are, according to this invention, to be made of iron cast in similar moulds. When cast they are to be annealed by submitting them to a gradual heat, in order to render the metal soft for the purpose of shaping and filing the teeth; and when this is effected, the grinding surfaces are to be hardened by placing them in a furnace or muffle with hoofs, horns, or bones, charcoal pounded or ground, or common soot mixed with kelp or common or "marine" salts laid on with the sediment or lees of malt liquor, or with acid or gelatinous matter. When heated to a proper heat, the metal is to be plunged into water.

[Printed, *id.* No Drawings. See Repertory of Arts, vol. 5, p. 247.]

A.D. 1781, December 24.—No. 1308.

SMITH, CHARLES.—This is an invention of apparatus designed for dressing flour or meal. Two machines in which are respectively mounted a number of sieves, are described. The sieves are suspended by chains or cords, and in one machine are connected together, and shook or jolted by means of a crank. In the other machine the sieves are shook or jerked suddenly by a trundle wheel, and react by means of springs. Both machines are fed from hoppers respectively placed over the first of the sieves, which differ relatively in fineness of texture, for the purpose of separating in succession the ground meal into distinct qualities of flour, pollard, and bran, and respectively deposit the separate products in different receptacles.

[Printed, *id.* Drawings. See Rolls Chapel Reports, 6th Report, p. 166.]

A.D. 1783, December 19.—No. 1412.

BLACKMORE, BENJAMIN.—This invention relates to machines or looms adapted to the manufacture of bolting cloths, to be used by millers in the process of dressing flour. The arrangement of the machine is described as follows:—

"The cane or chain is turned upon a cane noll in the usual way, and is then taken in through two harnesses, one of

“ which makes the upper, and the other makes the under part  
 “ of the bolting cloths. After the cane is taken through the  
 “ harness it is also taken through a false reed, and afterwards  
 “ through the reed that makes the work. From thence it is  
 “ taken through what I denominate a regulator, constructed  
 “ of a piece of hoop cane, taken off flat, so that nothing  
 “ remains but the middle part, which is strengthened with  
 “ wires of the same length; and through this cane are various  
 “ holes, according to the quality of the bolting cloths, and the  
 “ fineness of the reed, and through these holes are put various  
 “ horsehairs, in number as the quality of the bolting cloths  
 “ require. At the end of each hair is fastened a small weight,  
 “ called a lingol, and made of brass, lead, or other metal.  
 “ The cane of this regulator is drawn up into a groove tuk  
 “ in the hand ball of the batten, and fastened to wires fixed  
 “ in the hand ball at two different parts of the cane, and at  
 “ three other parts of the cane is fastened to the burdown or  
 “ upper block of the batten by means of chords let through the  
 “ hand ball, and tied to the cane. The lingols are let into a  
 “ chace, cut in the under block of the batten, and fastened  
 “ by a wooden rebat to keep it steady, and two wires, fastened  
 “ by rings, are placed at the top of the lingals, to keep them  
 “ from rising. Behind the hair is fixed a brass plate, which I  
 “ call a bolster, because it stays the hair whilst it performs  
 “ the work, and then the cane or chain is taken through all  
 “ the tackle, and fastened to a breast roll, and set to work  
 “ with double mounture of all sorts (videlicet) sixteen tumblers,  
 “ sixteen lamms or counter meshes, and nine treadles.”

The mode of working is described and the method resorted to for gradually diminishing the breadth of the cloth, which is made in various widths.

[Printed, &c. Drawing.]

A.D. 1785, June 11.—No. 1484.

HILTON, ROBERT.—This invention relates, 1st. To a mode of furling and unfurling the cloth on the sails of a windmill, when the latter is either in motion or at rest. 2nd. To a mode by means of flyers, whereby the weight of the stones may be regulated according to the varying force of the wind, and 3rd, a regulating nut or wheel “for turning the stones so as  
 “ to cause the mill to work in a more uniform manner.”



The furling and unfurling of windmill sails when either in motion or at rest is effected by means of ropes which pass along the main shaft of the mill and out to the extreme end of each sail, passing over pulleys disposed where necessary for changing the direction of the ropes, and to facilitate the working of the apparatus, which is a combined arrangement of wheels, pulleys, rods, levers and springs.

[Printed, 10*d.* Drawing. See Rolls Chapel Reports, 6th Report, p. 170.]

A.D. 1786, October 30.—No. 1567.

TAYLOR, WALTER.—This invention relates to three modifications of machines adapted to the grinding of grain or malt and to other similar purposes; the object being to substitute cast iron for steel. It also relates to a mode of driving mills and machines by friction wheels instead of toothed gearing, and to “coaks for shivers or pulleys for ship blocks.” As regards grinding grain, it consists in:—

1st. A machine in which the grinding surfaces are made of cast iron in form similar to the surface of the stones used by millers or maltsters, such cast iron grinding surfaces having grooves or furrows to admit of the flour passing. Steel cutters to facilitate the grinding may be fixed in the grooves and furrows of the cast-iron surfaces.

2nd. A machine wherein the grinding surfaces are formed one on the internal surface of an outer cone, and the other on the external surface of an inner cone, which exactly fits into the former; the contiguous surfaces are grooved or furrowed for grinding, to assist which steel cutters as in the former machine may be adapted to the grooves.

3rd. Grinding mills similar to the steel mills. The grinding surfaces of these mills may be made of cast iron, lignum vitæ, or other wood, having grooves or furrows to cut or grind; or there may be steel cutters fixed in the grooves, to make the grinding operation more effective.

One large horizontal wheel will (it is stated) drive one, two, or more smaller wheels, brought into frictional contact therewith. The small wheels actuating, each a pair of grinding surfaces, with a more steady and equable motion than can be obtained by the use of toothed gearing.

[Printed, 4*d.* No Drawings. See Rolls Chapel Reports, 6th Report, p. 173.]

A.D. 1787, November 15.—No. 1628.

MEAD, THOMAS.—This is an invention of a regulator adapted to govern the speed of wind and other mills, also grinding mills, bolting and flour dressing apparatus, and to general purposes where a uniform speed in prime motors is desirable. The vertical spindle of this governor receives rotary motion from some principal moving part of the machine or apparatus the speed whereof it is required to regulate, and it acts by the centrifugal force of two gyrating spherical balls, respectively attached to the free ends of two pendent levers, diametrically jointed to the underside of a disc, one on each side its center. The disc is horizontally fixed on the vertical spindle of the governor, up and down which spindle the collar or operating part is caused to slide by two connecting rods, which have one end respectively jointed thereto, the other ends of these connecting rods being jointed to the pendent levers, which carry the governor balls.

Windmills have their speed regulated by means of cords, which furl the sails as they are pulled upon by the rise of the sliding collar, and relax them when the collar falls, according as the speed, and consequently the centrifugal force of the balls diminishes.

Grinding mills have their speed regulated by increasing or diminishing the proximity of the grinding surfaces, and this is effected by stepping the end of the mill spindle in a cup bearing carried by a lever, which is by various contrivances placed in communication with the sliding collar of the governor, and the feeding of the mill may be regulated by similar means.

Bolting mills are regulated by the movement of a strap or band upon two conical drums, fixed to rotate in parallel position relatively, one upon the axis of the bolting machine, and the other on the motor shaft; the strap runs round and is moved longitudinally along the drums by a guide connected to and operated by the governor slide, so that when it is running round the small end of one drum it is received therefrom on the large end of the other, and vice versa.

For general and other purposes the sliding collar of the governor may have the form of a cone, and be grooved spirally to actuate a wheel with teeth suitably shaped to engage therewith.

[Printed, 102. Drawing. See Rolls Chapel Reports, 6th Report, p. 177.]

A.D. 1789, October 29.—No. 1706.

HOOPER, STEPHEN.—This invention relates to the construction of apparatus designed for regulating the speed of wind and other mills, grinding mills, flour dressing machines, and other mechanism actuated by motors of varying power. This regulating apparatus operates by means of the centrifugal force of two gyrating spherical weights respectively attached to the free ends of two pendent levers, which have their fulcrums jointed one on each side the center of motion to the underside of a carrier wheel or disc, fixed on a vertical shaft which rotates at a speed coincident at all times with the speed of the machine the apparatus is required to govern, so that whenever the speed of such machine increases the balls have liberty to diverge or separate centrifugally, and when the speed, and consequently the centrifugal force diminishes, they fall towards each other, the mean point in their range of action being the desired working speed of the machine. The inner ends of the pendent levers have the form of sectors furnished with teeth, which engage with two racks vertically fixed on the opposite sides of a short tube or sleeve, which embraces the shaft and has liberty to slide up and down in accordance with the divergent or convergent motions of the balls, and this sliding movement of the sleeve is availed of by means of rods with racks and pinions or otherwise, to furl or unfurl the sails of windmills, to govern the feed and regulate the distance apart of the grinding surfaces of flour mills by means of a lever which lifts the running stone, to govern the speed of flour dressing and the working of other machines and apparatus, wherein uniformity of speed is desirable. The application of the regulator to windmills, grinding mills, and feeding apparatus is shown and described.

[Printed, 10d. Drawing. See Rolls Chapel Reports, 6th Report, p. 181.]

A.D. 1791, March 3.—No. 1794.

SHORLAND, WILLIAM.—This invention relates, 1st, to the construction or combination of two, three, or more, water wheels, and the water courses and sluices connected therewith, the object being to obviate the effects of back or tail water; 2nd, the construction of mills adapted to the grinding of "all and every sort of corn, grain, pulse, and seeds," and other vege-

table matters and mineral substances, and to be actuated by steam, water, wind, or horse power, or by manual labour, the chief novelty consisting in the working position of the running stone, which is placed on a horizontal shaft and grinds with its broad circumferential periphery, which is to be grooved or furrowed in a suitable manner, the fixed grinding surface being a concave stone, adapted to the segmental curve of a portion of the running stone. "These stones, metal, or wood to be made of any size, in thickness or height, the power of the work may require. This runner for grinding on the edge, instead of the flat or face, is to be made solid or hollow; if hollow in the form or shape of unshrouded water wheel, with a ball or globe of iron, or any sort of metal to be put in the inside between the arms, to help and accelerate the motion of the machine."

[Printed, *ad.* No Drawings. See Rolls Chapel Reports, 6th Report, p. 184.]

A.D. 1797, January 24.—No. 2158.

**FERRYMAN, ROBERT.**—This invention relates to the construction of a grinding mill combined with apparatus for previously shelling the wheat, and subsequently dressing or sifting the ground substance.

The shelling apparatus is horizontally disposed in the upper part of the mill frame directly over the grinding section, and consists of an obliquely grooved roller, the axis of which rests on bearings in the frame sides. This roller is circumvested by a rubbing cloth, and is furnished with leather strips; its axis carries at one end a crank handle which gives motion to the whole apparatus; on the end of the axis is a fly-wheel, a grooved pulley which gives motion to a fan, and a spur wheel which engages with another tooth wheel on a horizontal shaft or spindle below. This latter spindle carries a bevel wheel in gear with another bevel fixed on the vertical spindle of the mill. The running mill-stone has the form of the frustum of a cone, is externally grooved or furrowed in the ordinary way, and revolves in the bed-stone which is in two parts, a conical recess being formed half in one part and half in the other to receive the running stone, the stationary grinding surface being the interior of the conical recess. Beneath the mill is fixed a horizontal circular sieve, wherein a brush fixed on the



mill spindle rotates. The grain is supplied from a hopper above, and whilst being carried under a brush and round between the grooved roller and the rubbing cloth it is divested of the outer shell or husk, which is blown off by the fan, and the grain descends a shoot which conducts it to the mill-stones. Thence as it is ground it falls through a conical passage beneath into the center of the sieve. By the action of the brush the flour is separated, and falls through the sieve into a drawer beneath, whilst the bran is thrown off by the brush centrifugally, and is conducted by a shoot into a separate receptacle.

[Printed, 6d. Drawing. See Rolls Chapel Reports, 6th Report, p. 193.]

A.D. 1798, June 5.—No. 2241.

PALMER, JOHN.—This invention relates to the construction of a machine or apparatus designed for "clearing grain from the straw" or thrashing, and to the operating or grinding surfaces of mills. The chief novelty consists in producing an intermittent action in the machine, the operating parts of which rotate continuously; this is effected by furnishing the skeleton drum of the thrashing machine with longitudinal beaters round one half of its circumference only, the other half being left plain, and is consequently ineffective, but the advantage obtained consists in being able to maintain a high speed, which is accelerated during the inoperative intervals; the feeding rollers are constructed on the same principle, to act only during one half portion of each revolution, the rotation of the beating drum and the feed rollers being made coincident in time by tooth wheels.

The grinding surfaces of steel mills are formed upon the same principle, being grooved only on one half portion of their surface, the other portion being left quite smooth, so that the grinding effect alternates, altho' the motion is continuous; by this means an accelerated force is obtained by the momentum which is gained during the non-effective interval that will enable the mill to be worked at a higher speed and with a keener cut than it could be with the same limited power if the grinding was continuous.

[Printed, 8d. Drawing.]

A.D. 1799, August 2.—No. 2336.

HUNT, WILLIAM, and CLIFFE, WASEL.—This invention relates to the construction of a grinding mill, which operates upon corn, malt, and other grain by means of roughened circular plates of steel or of hardened iron. The inventor says :—  
“ Take circular steel or iron hardened plates, deeply rough them  
“ like a file, or rasp, or groove, or furrow them in the manner  
“ now in use for mill stones, or make the grooves or furrows  
“ either diagonal or of lines, which intersect each other  
“ regularly or irregularly ; the selection and adoption of one  
“ of these must depend upon the work proposed, whether large  
“ or small grain, and the degree of pulverization it may be  
“ intended the grain shall undergo ; the plates may be of any  
“ diameter, but their size must, of course, be governed by the  
“ kind of work they are intended to perform. Make these  
“ plates either in one or more pieces ; the plates are to cut  
“ and run on each other in a manner similar to and actuated  
“ by a like power as works millstones. On the edge of the  
“ upper plate one or more projections of metal or other hard  
“ substance is to be fastened by screws or other means, which  
“ we call sweepers ; these will keep the cover clear, or in  
“ other words, by their means the mill will discharge itself.  
“ This purpose is accomplished in mill stones by the inequality  
“ on their edges. These plates may be made of any sort of  
“ metal or mixture of metal, and will grind or bruise all  
“ sorts of pulse or vegetable substances by only adapting  
“ the distance of the plates and the shape of the furrows  
“ to the kind of work proposed. If the plates are made of  
“ several pieces, take care to secure them well to a metal  
“ plate or plates, with screws, rivets, or by other means.”

[Printed, 4d. No Drawings.]

A.D. 1801, April 25.—No. 2489.

WRIGHT, THOMAS.—This invention relates to the construction of what are denominated “ hand stone corn mills,” adapted to the grinding of wheat and other grain. The stones of this mill are horizontally disposed on the platform of a wood frame 3 ft. square by 6 ft. high, and the top or running stone is actuated direct by a crank handle, which passes up through a guide in a cross frame above, and carries on its extreme top end a hori-

zontal fly wheel, for the purpose (it is stated) "to increase the power." The stones are eighteen inches in diameter, and both are finely scored on the face three inches from the eye, the remainder being picked out. The bed stone is regulated by a screw pivot, and a tub or drawer is placed beneath to receive the ground material. The feeding may be done from a hopper placed in the eye of the upper stone. Instead of the crank handle and top cross-frame, the mill may be worked by a handle formed by simply inserting an upright rod in the upper stone at a suitable distance from the centre of motion.

[Printed, 6d. Drawing.]

A.D. 1801, September 18.—No. 2540.

BARRATT, ZACHARIAH.—This invention relates to the construction of a mill adapted for grinding corn and other grain either by hand, horse power, water, or wind, for which latter purpose an apparatus, furnished with thin boards for sails, is contrived for driving the machine or mill, and when in position it is to be fixed to the gable of a house or building.

The mill and driving gear is contained in an upright wood frame, the stones being actuated by a vertical spindle that obtains motion from a vertical driving shaft, to which the power is to be applied either direct or otherwise, the speed when necessary being regulated by the action of a wedge upon a brake wheel. Provision is made for attaching to the mill and driving a sifting machine. The spur gearing on the vertical driving shaft is to be contrived for different speeds, to suit the varying strength of the wind, and in some cases instead of different wheels or concentric circles of teeth on one wheel it is proposed to enlarge the spur wheel when required, by screwing on segmental sections.

[Printed, 6d. Drawing.]

A.D. 1804, February 9.—No. 2753.

PASMORE, THOMAS.—This is an invention of a combined apparatus adapted to the "chopping of straw, and for splitting beans, crushing oats and grinding malt and barley." The splitting, cutting, and grinding, or mill section of the apparatus may be detached, so as to simply leave a machine for chopping straw, or chaff cutter, the frame whereof is made of cast iron to impart to it the requisite stability. The straw is



laid in a long box or trough, and is drawn forward and presented to the knives by a pair of feeding rollers which are actuated by tooth wheels. The knives are curved to lay flatwise, and are fastened obliquely on the circumference of a skeleton drum wheel that is mounted on the axis of the fly wheel, to one of the arms of which is affixed a handle for turning by hand.

The splitting, crushing, and grinding mill (as stated above) is detachable, but when required is fixed to the frame in a suitable position for being worked. It may be so placed at the straw cutting end of the machine, as to gear with the pinion that drives the feeding rollers, or it may be permanently fixed to the back end of the frame of the machine. It operates by means of a cutting roller and cutting plate, and is supplied from a hopper by a feeding roller.

[Printed, 6d. Drawing. See Rolls Chapel Reports, 6th Report, p. 302.]

A.D. 1804, December 19.—No. 2806.

UNDERDOWN, ABRAHAM.—This invention, entitled, "A new mode or method of making flour without grain," consists in grating or grinding together into a fine state, potatoes, turnips, parsnips, white beet, and Jerusalem artichokes. The ground substance combined is then put into water, and after it has remained several hours, it is strained off and then put into more water, and afterwards again strained, this part of the process being repeated until the water that runs off is quite clear. The substance is then finally strained, then pressed, and afterwards dried in an oven or by other convenient means, and when perfectly dry, it is ground into fine flour in a mill suitable for grinding grain. Either of the above vegetable substances alone, or any two or more of them mixed together, will answer for making coarse or common flour, but for producing fine or best flour, the rind is first pared off the vegetables before they are ground or grated.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 6 (second series), p. 250; Rolls Chapel Reports, 7th Report, p. 189.]

A.D. 1810, August 2.—No. 3368.

WILLIAMS, CHARLES.—This is an invention of a mill or machine adapted to the crushing or grinding of malt. The machine described is intended for use where large quantities

are required. The entire circumferential surface of the main grinding roller, which is made of cast iron, is so grooved or channeled, that in transverse section its surface exhibits a series of serrations similar in form to the teeth of a saw. The projecting ends of the horizontal axis of this grinding roller are mounted to rotate in coupled bearings, which slide in a bearing box, and are capable of horizontal adjustment on one side by means of a screw, with which they are kept in contact by the pressure of a weighted lever acting upon them on the opposite or back side. The other grinding surface is stationary, and composed of the edges of a laminated series of knives or cutters, which are separately bevelled, and collectively form when bolted together, a concave serrated grinding surface corresponding to the arc of the grinding roller, against which it is fixed on the plane of its axis, and in frictional contact with its periphery. The grain fed from a hopper first falls upon the upper end of a coarse screen, which detains the rubbish whilst the grain passes through on to a finer sieve beneath, and thence from the lower end of this screen it falls between the grinding surfaces, the dust passing through the screen. A shaking motion is imparted to the screens, the feed is regulated by a screw, and the power is applied to the axis of the grinding roller.

[Printed, 6d. Drawing. See Repertory of Arts, vol. 17 (second series), p. 327; Rolls Chapel Reports, 7th Report, p. 111.]

A.D. 1812, January 28.—No. 3532.

TAYLOR, ALLEN.—This invention is entitled an “engine for the purpose of manufacturing all sorts of grain in flour, meal, or anything else required, which engine may be applied to many other useful purposes.”

[No Specification enrolled. See Engineer's and Mechanic's Encyclopædia vol. 2, p. 150.]

A.D. 1813, July 31.—No. 3727.

HAMILTON, JOSEPH.—This invention, relating to the manufacture of artificial mill-stones, is described by the patentee as follows:—

“First, I mould or form into convenient sized and shaped pieces any of the well-known earthen compositions or bodies which become partially or completely vitrified by exposure

“ to a strong heat, and I do make in any convenient manner  
 “ such a number of small channels, holes, or cells, in or through  
 “ the said pieces, as may facilitate the baking or burning of  
 “ the same, and give each of the said pieces one or more porous  
 “ or cellular surface or surfaces. Secondly, when the said  
 “ pieces are nearly dry or hard, I coat or cover the same with  
 “ any of the well-known glazing slips used by potters for the  
 “ glazing of earthenware, and I do bake or burn the said  
 “ pieces as stone ware or earthenware is usually baked or  
 “ burn’d. Lastly, I connect or unite by plaister of Paris, or  
 “ any other convenient cement, several of the said pieces  
 “ together, as French burr millstones are usually connected,  
 “ for the purpose of grinding or reducing corn, pulse, or other  
 “ seeds into flour or meal.”

[Printed, 4*l*. No Drawings. See Rolls Chapel Reports, 8th Report, p. 101.]

A.D. 1813, November 1.—No. 3747.

ROGERS, THOMAS.—This invention relates to the construction of machinery adapted to the manufacture from potatoes, parsnips, and other esculent roots and vegetable substances, flour for bread, pastry, and other purposes. The process is described as follows:—“ The potatoes, &c., &c., are reduced to  
 “ a pulp, which pulp is by pressing and drying, deprived of  
 “ the aqueous part, and brought into a granulated state by  
 “ drying. It is then ground by a mill in the manner of corn,  
 “ but it grinds best mixed with wheat; one fourth of the  
 “ latter is a good proportion. After being thus ground it  
 “ may be dressed in the bolting machine like ground wheat.  
 “ When the granulated potatoes, &c., &c., are not ground with  
 “ wheat, it is adviseable to mix it afterwards with wheat bran  
 “ for bolting. The flour made by the above process, if not  
 “ ground with wheat, is in all cases improved by mixing it  
 “ with about one fifth of wheat flour or meal. The granulated  
 “ potatoes, &c., &c., will require to be perfectly dry when to  
 “ be ground without a mixture of wheat. It will dress by  
 “ itself in the bolting machine, by which the skins are separated.  
 “ This flour, without any mixture of wheat or other  
 “ corn, will make bread in the common way by mixing a little  
 “ more barm than is used for wheat flour.”

Describes the machine employed for washing the potatoes, and the grinding cylinder, from the surface of which the pulp



is swept by a brush into a trough, and thence by spouts it is conveyed into vats. When settled and the water has been run off, the pulp is removed in buckets and pressed into cakes, which are afterwards broken and dried in a stove or otherwise. It is then in a fit state for grinding.

[Printed, *8d.* Drawing. See Rolls Chapel Reports, 8th Report, p. 101.]

A.D. 1814, April 1.—No. 3796.

SMART, GEORGE.—This invention relates to the construction of machinery or apparatus adapted to the grinding of corn and other substances. The inventor says:—"In order to reduce the labour in grinding, and adjust the power to the required force, and also to simplify and reduce the expense in mill making and grinding, so as to enable the farmer and house-keeper from being dependent on the present practice of grinding, every article required to be broke or ground may be performed by the application of rubbers or crushers resting on their fulcrums, and are pressed against the revolving body by means of leavers, weights, or springs. The rubbers or crushers acting each on a separate axle will admit of any irregular surface, from a square to a circle, to revolve against them, as each can be loaded more or less by moving the weights on the leavers farther or nearer to the fulcrum, or, if with springs by screwing them more or less down, as may be required. The rubbers or crushers may be plain, grooved, circular sided, concave, or any other figure best adapted for the substance to be broke or ground; the square or octagon are best adopted for breaking cement, stones, bones for manure, chalk, mixing clay, mortar, &c. For breaking malt, beans, &c., one crusher is only wanted, but for wheat, oats, barley, rice, or any flour or meal, the more rubbers or crushers the finer the article will be ground, and the more flats there are on the revolving body the more crushers can be applied to advantage."

[Printed, *4d.* No Drawings. See Rolls Chapel Reports, 8th Report, p. 102.]

A.D. 1815, May 23.—No. 3916.

KENRICK, ARCHIBALD.—This invention relates to the construction of mills adapted to grind coffee, malt, and other substances. The kind of mills to which the invention is applied, operate by means of a revolving conical cutter, which is furnished

externally with oblique teeth, and is concentrically fitted within a chamber or barrel of similar form. The barrel is furnished internally with similar cutting teeth, the intervening distance between the cutting edges of the teeth on the revolving cutter, and of those inside the barrel, being regulated by a screw.

The invention consists, 1st, in fixing or casting to the barrel of the mill a flange for the purpose of securing the mill by means of screws or nails to a post or pillar, wall, or other immoveable part, and in such manner that the axis of the revolving cutting roller will be perpendicular to the flange. 2nd, fixing the flange to the end of a stem cast laterally projecting from the barrel, and in such manner that the axis of the grinding roller is parallel with the flange. 3rd, casting the collar at the small end of the barrel, through which the axis of the grinding roller passes, in one piece with the barrel. It is preferred that all the parts of the mill be made of cast iron.

[Printed, &c. Drawing. See Repertory of Arts, vol. 38 (second series), p. 4; Rolls Chapel Reports, 8th Report, p. 110.]

A.D. 1819, February 9.—No. 4340.

EWBANK, HENRY.—This invention relates to the construction of machines adapted to the shelling, removing, or separating the outer and inner skins of rough rice from the pure rice they inclose. This is partly effected in the ordinary way, by the use of stones, that remove the outer shell or husk, which is blown off by a fan. The shelled rice is then passed through a cylindrical or polygonal screen of wire cloth. The axis of the screen is raised at one end, and the wire cloth is much finer at that end for the purpose of allowing only the dust to pass through, the shelled rice passing through the lower or coarser section, whilst any unshelled grains which have escaped the stones and therefore will not pass through the wire, are delivered at the lowest end of the screen to be returned to the stones.

In order to remove the inner skin of the shelled rice, it is submitted to a triturating process in mortars by means of heavy pestles. These mortars are about 25 inches in diameter, and contracted at the top; each is capable of holding about 5 bushels of rice, leaving additional space for the rice to rise

when the pestle, which weighs from 250 to 300 lbs. descends. The ends of the pestles are shod with iron and are made to taper downwards, and although so heavy, they do not crush the rice, but only cause the grains to turn and rub against each other. 60 to 80 minutes are required to triturate one charge, the pestles making 40 strokes per minute. After this part of the process, the rice is again fanned and screened, and is then ready for market.

[Printed, 4d. No Drawing. See Repertory of Arts, vol. 35 (*second series*), p. 129; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 590; Rolls Chapel Reports, 8th Report, p. 129.]

A.D. 1823, August 20.—No. 4837.

ROBINSON, MATTHIAS ARCHIBALD.—This invention relating to the manufacture of pearl barley and groats into a soluble meal, consists in a peculiar mode of drying and treating the grain, whereby its vegetative property is destroyed, and a meal free from husk and fibre and quickly soluble in water is produced. The pearl barley or groats taken in the state in which it is usually sold, is first freed from husks and impurities by winnowing. It is then placed in sieves disposed in chambers gradually heated to a temperature of about 170° Fahr. where it remains for about 4 hours. This part of the process destroys the vegetative property of the grain, and the raw taste is removed without parching. The grain is then spread out, and when cool, is ground in steel mills and afterwards dressed through bolting machinery of the ordinary construction, but having cylinders of fine wire gauze respectively differing in degrees of fineness, ranging from 24 to 48 in an inch; the meal having passed through the latter is then nearly ready for use.

Describes the mode for preparing from this meal barley water, food for infants, puddings, gruel, and thickening broth.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 2 (*third series*), p. 104; London Journal (*Newton's*), vol. 7, p. 126; Register of Arts and Sciences, vol. 3, p. 151.]

A.D. 1824, January 8.—No. 4885.

DEVEREUX, FRANCIS.—The object of this invention relating to the grinding of wheat and other grain, is to improve the construction of the mill known as the "French military mill,"

by the addition of a "regulator," which is fitted on the main axle, and is for the purpose of regulating the distance apart of the disc or plates, the contiguous surfaces whereof are divided into segmental sections, which are respectively cut in parallel channels or grooves suitable for grinding. One of the grinding plates is fixed on the main axis, which rotates and is mounted horizontally in suitable bearings carried at one end by a kind of yoke, and at the other by that part of the frame against which the stationary grinding plate is fixed, consequently the grinding surfaces are vertical, and the grain gravitating from a hopper above, finds its way down a channel which conducts to the grinding surfaces through an aperture in the stationary plate, directly above the axis, which is operated by a winch handle.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 9, p. 393.]

A.D. 1825, February 19.—No. 5102.

AYTON, JAMES.—This is an invention of an adjusting instrument or sextuple spring, to be applied to the axis of a bolting reel or cylinder, and fixed thereon by screws. This instrument is furnished with six radiating arms of spring steel, equidistant apart, and at the extreme end of each arm is formed a broad hook, made very smooth to receive one of six loops, which are attached to the tail leather of the bolting cloth. Each arm of the instrument or spring is set by a kind of working joint into the central boss, which is fixed on the axis of the reel in such a position, that when the loops of the bolting cloth are linked on the hooks of the spring arms, a uniform tension of the bolting cloth is established, so that when the machine is at work, each part of the cloth will strike the beaters with uniform force, a proper degree of vibration will be secured, and (it is stated) the work will be performed in a safe, speedy, and highly beneficial manner. Some changes or modifications are made in the bolting machine, but they do not constitute a part of this invention.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 2 (*third series*), p. 19; London Journal (*Newton's*), vol. 12, p. 11; Register of Arts and Sciences, vol. 4, p. 324; Engineers' and Mechanics' Encyclopedia, vol. 1, p. 217.]

A.D. 1826, December 20.—No. 5436.

WILSON, MELVIL.—(*A communication.*)—This invention relating to the construction of a machine contrived for the purpose



of cleaning rice is thus described by the inventor. "My machine  
 " consists of a shaft made of iron or other suitable material,  
 " having a number of arms projecting from it (which number  
 " may be more or less, but at present I prefer about eighty-  
 " eight), working or revolving in a cylindrium or conical case  
 " (made of iron or other suitable material), having a number of  
 " arms attached to its inner surface, and projecting towards  
 " the centre of such cylinder or cone, but of such length as  
 " not to touch the revolving shaft by one or two inches, more  
 " or less. The position of these projecting arms, both in the  
 " revolving shaft and also in the cylinder, is such, that when  
 " a rotative motion is communicated to the shaft and arms,  
 " projecting from it, the said shaft and arms shall not come  
 " in contact with the arms projecting from the interior of the  
 " cylinder, or with the cylinder itself, but have a free and  
 " uninterrupted space to work clear in, of some one or two  
 " inches, more or less, but at present I prefer about one inch  
 " working distance between the circle described by the arms  
 " projecting from the revolving shaft and those projecting  
 " from the interior of the cylinder. In order to obtain this  
 " free action between the arms of the shaft and those of the  
 " cylinder, they are so disposed in equidistant circles round  
 " the interior of the cylinder as to leave a free space for the  
 " arms projecting from the shaft, and disposed at the same  
 " distance from each other on the shaft as the rows or circles  
 " of arms are which are attached to the cylinder, and between  
 " which intermediate spaces the arms on the revolving shaft  
 " are made to pass. . . . The shaft is made to revolve at a  
 " high speed by any of the well-known powers, and the cylin-  
 " der revolves in a contrary direction with a slow motion.  
 " The machine may be worked upright or inclined; at  
 " present I prefer to work it at an angle of about forty-five  
 " degrees."

[Printed, 1s. Drawings. See London Journal (Newton's), vol. 2 (second series), p. 12; Register of Arts and Sciences, vol. 1 (new series), p. 65; Engineers' and Mechanics' Encyclopedia, vol. 2, p. 591.]

A.D. 1827, February 20.—No. 5466.

BENECKE, WILLIAM. — (*A communication from William Pescatore.*)—This is an invention of a machine designed for the process of grinding or crushing seeds and other oleaginous

substances prior to the extraction of oil therefrom. The main feature of the machine, which is to be made by preference of iron, and may be applied to the grinding or manufacturing of other animal or vegetable substances, is stated to consist of a "hollow cone firmly secured and held in a vertical position in a proper frame, and having within it teeth or projecting oblique scores (as they are technically termed), and the exterior edges are also formed into teeth or notches. Into this hollow cone a solid cone is fitted of a shape to correspond with the hollow cone, and like it fitted with teeth or projecting oblique scores but in a reversed position, and its edges are also toothed. The latter or solid cone has a rotary motion communicated to its axis from any first moving power, such as steam, water, wind, animal force, &c., and the solid cone is held or retained in a proper situation within the hollow cone by means of an adjusting screw, a wedge, or any other fit and proper contrivance, so as to crush and grind the oleaginous or other materials introduced into cavities formed in the spaces between the teeth from a supplying or feeding spout, pipe, or channel, made for the purpose in the outer cone. After several revolutions of the rotary cone, the substances to be ground come out of or are discharged from the exterior through finely divided gaps or notches made in the cones, and if they are oleaginous, a considerable quantity of oil will run out spontaneously on one side of the machine, whilst on the other side of it the meal or flour from the seeds will be discharged warm enough to be in a proper state to undergo the operation of pressing without requiring to be heated over a fire, as usual, and, provided that the press be powerful enough, the whole remainder of the oil will be discharged at one pressing, and the meal or oil cake will not require any other grinding, heating, or pressing."

[Printed, *Ed. Drawing.* See Repertory of Arts, vol. 6 (*third series*), p. 256; London Journal (*Newton's*), vol. 2 (*second series*), p. 337.]

A.D. 1827, March 10.—No. 5472.

LUCAS, JONATHAN, and EWBANK, HENRY.—This invention relating to apparatus designed for cleaning rice, is supplementary to one of early date, for which Letters Patent dated

February 9, 1819, No. 4340, were granted to Henry Ewbank. As regards the former process, the mode of removing the husk or shell of the rice is retained, but the introducing it into the mortars and submitting it to the action of pestles until the complete removal of the fine inner skin or pellicle is effected, is now necessarily modified in consequence of the glutinous nature of the fine skin, which by the continued trituration becomes adhesive. It is therefore found desirable to use two or more sets of mortars and pestles, to which in succession the grain is removed, winnowing or screening being resorted to after each stage of the process, to separate from the mass the detached particles of skin, and after the operation of the first mortar, it is found advantageous when the grain has been winnowed and removed to the second mortar, to add to it a portion of the shells or husks of the rice, which have been previously removed by the action of the stones, as described in the Specification of the former patent.

[Printed, *ad.* No Drawings. See London Journal (*Newton's*), vol. 1 (*second series*), p. 356; Register of Arts and Sciences, vol. 1 (*new series*), p. 84; Engineers' and Mechanics' Encyclopædia, vol. 2, p. 590.]

A.D. 1827, July 12.—No. 5523.

VAZIE, ROBERT.—This is an invention relating to the construction of various apparatus respectively designed for preserving, extracting, and grinding grain; and a steam engine, and steam stove or apparatus for preparing and dressing various kinds of food, and applicable to other purposes. It consists of:—

1st. "The corn preserver,"—which is for the purpose of shielding the corn in the sheaf from the effects of wind and rain during harvest time.

2nd. The "corn extractor" is a kind of thrashing machine, to the revolving arms or beaters of which the free or seed end of the sheaf is presented in a pendent position, the other end of the sheaf being bound together and slung depending from a fixed part above. The corn (it is stated) is extracted without bruising, and the straw is uninjured.

3rd. The "conical corn mill," operates by means of two inverted concentric cones by means of steel or other metal, one rotating on a vertical axis within the other, the external surface of the inner cone and the internal surface of the outer,

being grooved or channeled spirally in opposite directions to form the grinding surfaces, to and between which the grain is fed from a hopper above, and when ground, falls from the open end or apex of the outer cone into a receptacle beneath.

4th. A "centrifugal steam engine."

5th. "Steam stove" and apparatus for cooking food and for other purposes.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 7 (*third series*), p. 47; London Journal (*Newton's*), vol. 3 (*second series*), pp. 193 and 265; Register of Arts and Sciences, vol. 2 (*new series*), p. 211.]

A.D. 1829, June 4.—No. 5799.

SMITH, JOHN.—This invention relating to the construction of a machine designed for bolting or dressing flour consists in the use of a cast-iron skeleton frame made in two longitudinal semi-cylindrical parts, which when fixed together form a cylindrical frame, to the interior of which the bolting web or wire gauge is fixed by means of screw bolts, which pass through holes in the circumferential ribs. In addition to the internal brushes and the other usual appliances there is a revolving cylindrical brush, applied externally to brush the flour from the outside of the wire gauze, and by that means keep it clear; the bolting cylinder rotates slowly, and when the longitudinal stretching rails come round to beneath the brush, the latter by means of tappets is caused to rise.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 9 (*third series*), p. 96, also vol. 10 (*third series*), p. 85; London Journal (*Newton's*), vol. 4 (*second series*), p. 344; Register of Arts and Sciences, vol. 4 (*new series*), p. 35.]

A.D. 1829, November 2.—No. 5861.

McCURDY, JOHN.—(*A communication.*)—This invention is termed by the patentee, the "imperial corn mill" the horizontal grinding surfaces of the stones whereof, respectively differ in the arrangement and form of their grooves, those in the upper or revolving stone being cut in radiating curves, and those of the lower fixed stone rectilineally in sexagonal sections. The mill is turned by horse power, for which purpose the upper end of the vertical driving spindle is fixed in a horizontal lever or beam, to the end of which the power is applied. The mill is fed from a hopper; the grain passing thence down a spout falls in regulated quantity into an opening in the center of



the upper stone. After passing between the grinding surfaces, the distance apart whereof is adjustable, the ground material as it issues from the outer edges of the stone, falls upon an inclining bolter, to which a rapid shaking motion is imparted by an apparatus fixed on the lower end of the mill spindle. By this means the flour is shook or sifted through the bolting cloth, whilst the pollard and bran gradually gravitate to and fall off the lowest end of the bolter, outside the receptacle wherein the flour is deposited. The French buhr stones are preferred, and the holes and imperfections which are present in them, the inventor fills up with a cement composed of the same material broken and pulverized, and being mixed with the same weight of alum is placed in a vessel, and when heated over a fire to a boiling state, is by means of a ladle poured into the holes. Artificial stones, equal (it is stated) to the French buhr in its natural state as regards hardness and grinding quality, may be produced in moulds from the same combined materials.

[Printed, *sd.* Drawing. See Repertory of Arts, vol. 9 (*third series*), p. 153; London Journal (*Newton's*), vol. 9 (*second series*), p. 204; Register of Arts and Sciences, vol. 4 (*new series*), p. 195.]

A.D. 1830, February 6.—No. 5898.

WILSON, MELVIL.—(*A communication.*)—This invention relating to the process of preparing and clearing paddy or rough rice, consists in the use of what are called sieve mortars. The sides of these mortars, instead of being as usual constructed solid, are made of wire gauze or webbing attached to a solid bottom, and kept in form at the sides by ribs, and at the top by a metal ring, to which the ribs and wire gauze are fixed. Instead of the wire gauze, sheet metal thickly perforated may be employed, the holes in the metal or the texture of the gauze being sufficiently open for the sifting through of the flour, but not to permit the passing through of the rice. By the use of these sieve mortars, heavy pestles it is stated are dispensed with, and lighter ones are used with a longer stroke, which is repeated from 120 to 130 times in a minute. The foot of the pestle, which does not strike the bottom of the mortar is 3 inches in diameter, and the mortar is 22 inches clear diameter at the rim, 27 inches at the center or midheight, and 12 inches clear diameter at the bottom, which is lined with sheet iron.

The removal of the flour as the process proceeds, prevents the heating and clogging of the rice.

[Printed, *ed.* Drawings. See *Repertory of Arts*, vol. 10 (*third series*), p. 149; *London Journal (Newton's)*, vol. 2 (*conjoined series*), p. 28; *Register of Arts and Sciences*, vol. 3 (*new series*), p. 100; and *Engineers' and Mechanics' Encyclopedia*, vol. 2, p. 598.]

A.D. 1830, March 20.—No. 5919.

FULTON, JOHN ALEXANDER.—This invention relates to a process of shelling pepper and preparing it for market. The inventor says:—"I take a quantity of pepper and put it into a mill constructed and worked in a similar manner to those used for making pearl barley, and for the like purposes, except that the inside surface of the case is best to be quite smooth, and also the case is better to move in a contrary way to the stone. This process is continued until the whole or greater part of the husk is off; it is then separated from the husk and dust, and is fit for sale or preparing for use. As my invention consists in removing by machinery the husks from the pepper, whereas hitherto the outer husk only has been taken off, and that by chemical process, I shall consider any means made use of for the purpose of removing the husks by machinery an infringement on my Patent."

[Printed, *ed.* No Drawings. *Repertory of Arts*, vol. 10 (*third series*), p. 271; *London Journal (Newton's)*, vol. 6 (*second series*), p. 200; *Register of Arts and Sciences*, vol. 5 (*new series*), p. 163; *Engineers' and Mechanics' Encyclopedia*, vol. 2, p. 285.]

A.D. 1830, August 5.—No. 5978.

SHELLS, CHARLES.—(*A communication.*)—This invention relates to the construction of a machine or apparatus contrived for the purpose of rubbing off or removing the fine pellicle or skin which remains on grains of rice after the shells or husks have been taken off by the ordinary process. To effect this the inventor says:—"I place the shelled rice between a mill-stone, commonly called the bedstone, and a runner made of wood or other substance, faced or covered with sheep skins with the wool on, or any other such elastic substance which will press the rice, whirled in rapid motion, close against the bedstone, not so hard as to break the rice, but sufficiently so to cause the grain to be rubbed while in rapid motion close against the stone, which takes off the extre-

“neous substance from the grains, leaving the pearly substance  
 “of the grain bright and clear; this process is to be repeated  
 “as many times as the quality or state of the rice requires,  
 “and it should be screened and fanned between each operation;  
 “the rice is then in the ordinary manner to pass through  
 “screens and fans to the spout which delivers into the barrel  
 “or sack.” The bedstone and runner used “are six feet in  
 “diameter, and the runner moves at the rate of one hundred  
 “and twenty revolutions per minute, though it is not limited  
 “to any particular dimensions or speed, but these have been  
 “found to answer every purpose. The bedstone being stationary  
 “may be of any shape, provided its face is oval and  
 “of as much or greater dimensions than the runner. It is  
 “only necessary further to state that when sheepskins are  
 “used, the skin should come in contact with the rice, and  
 “not the wool, which is only intended to serve as a cushion  
 “or elastic back or support to the skin.”

[Printed, *4d.* No Drawings. See *London Journal (Newton's)*, vol. 8 (*conjoined series*), p. 359; *Register of Arts and Sciences*, vol. 6 (*new series*), p. 13; *Engineers' and Mechanics' Encyclopedia*, vol. 2, p. 593.]

A.D. 1830, December 6.—No. 6043.

BLUNDELL, HENRY.—This invention is supplementary to former Letters Patent, granted February 20, 1827, No. 5466, to William Benecke, and subsequently assigned by him to the present inventor, who states that this invention consists of improvements on or modifications of the former machine, and that it is constructed for the process of grinding or crushing seeds and oleaginous substances, and extracting oil therefrom, and that it is applicable (with certain alterations) to other useful purposes. Its main feature consists in modifying the conical form of the grinding surfaces of the former machine, and blunting or cutting off the ends of the teeth or oblique scores in the inner surface of the hollow cone, so that the cavities between the teeth are put into communication. Around the base of the cone is formed an annular set of diagonal teeth and in one modification “there is no flat or right angled surface at the base of the cone, and no small teeth at the crown.” In another modification the conical form of the grinding surfaces is dispensed with, and a circular flat plate is employed, having round it an annular set of diagonally cut teeth or



scores, and an inner set of inclining teeth round its central or raised portion, there being a main set of oblique ribs or intermediate teeth, with cavities at the ends and notches to permit the seed or substance under operation to pass through. By heating the machine to 120° Fahr. the best results may be obtained.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 12 (*third series*), p. 18; London Journal (*Newton's*), vol. 7 (*second series*), p. 236; Register of Arts and Sciences, vol. 6 (*new series*), p. 104.]

A.D. 1831, August 11.—No. 6152.

SELDEN, DAVID.—(*A communication.*)—This is an invention of a hand mill, designed for attachment to a post, partition, or other suitable place, and applicable to the grinding of coffee, corn, and other substances. The back plate of the mill forms the back wall of the grinding chamber, the back part of the feeding hopper above, and of the delivery spout beneath, also the back adjustable bearing for the axis of the grinder, and the flange by which, with the aid of nails or screws, the mill is fixed in its place. The revolving grinder has the form of a zone of a sphere or an extremely obtuse cone. Its surface is furnished with sections of grooves or channels, diminishing in size but increasing in number from the apex to the base; the mill chamber has a corresponding form, its inner surface being similarly grooved and channeled, forming cutting teeth which as the grinder revolves engage in succession. A handle by which the mill is operated is fixed on the projecting axis of the revolving grinder, which is capable of adjustment for fine or coarse grinding by a set screw in the back plate.

[Printed, 8d. Drawing. See London Journal (*Newton's*), vol. 1 (*conjoined series*), p. 53; Register of Arts and Sciences, vol. 7 (*new series*), p. 72; Rolls Chapel Reports, 7th Report, p. 136.]

A.D. 1831, December 15.—No. 6195.

SAVOYE, CLAUDE MARIE.—(*A communication.*)—This invention, relating to the construction of mills intended for grinding grain and other substances consists in:—

- 1st. "A peculiar modification of the parts which constitute the rubbing or grinding surfaces."
- 2nd. "Giving to the said rubbing or grinding surfaces an alternating circular motion."

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3rd. "Surrounding the said mills or machines with water or other fluid at a low temperature, to abstract and carry off the heat generated by the friction of the machinery and the substances operated upon."

The active grinding surfaces of these mills are formed on the inner and outer circumferential surfaces of metallic rings, of which one, two, or any greater number may be employed in a mill. These rings are placed in deep annular grooves formed in the mill bed, and the inner and outer surfaces of the annular ridges formed in the bed by sinking the grooves constitute the fixed grinding surfaces, which, as also those on the rings, have straight teeth, which cut in both directions when a semi-rotary reciprocating motion is imparted to the rings by a vibratory rod, that is fixed to the rings and operated by a crank. Several modifications of these grinding mills are described.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 14 (*third series*), p. 13; London Journal (*Newton's*), vol. 2 (*conjoined series*), p. 145; Register of Arts and Sciences, vol. 7 (*new series*), p. 225.]

A.D. 1832, May 3.—No. 6266.

GOODLET, GEORGE.—This invention relates to a method of treating or preparing rough meal after it is ground, and preparatory to its being dressed for flour, also ground barley, malt, and other grain previous to mashing or distilling. It consists in the application thereto of artificial heat. The inventor says:—"The plan which I have successfully adopted is, spreading the rough meal of ground wheat or other grain six or eight inches thick, more or less according to circumstances, on a steam kiln, with a linen bedding or bedding of other suitable material, and allowing it to remain ten or fifteen hours, more or less, according to the condition of the grain or heat of the kiln, during which time it is necessary to turn it occasionally. Afterwards it is removed from the kiln, for the purpose of being cooled previous to its being dressed for flour, or of malt or barley, previous to its being put into the mash tun. It will be found that the rough meal of wheat when prepared in this way will dress through a much finer engine, and that the flour . . . possesses in an eminent degree all the qualities which flour has when made from fresh-thrashed old wheat, thereby superseding the necessity of a mixture of old wheat, even at the beginning

“ of a new crop when the wheats are raw. The bread baked  
 “ from it is lighter, whiter, drier, and finer flavored, and is  
 “ found to keep better. Any apparent extra waste will be  
 “ recovered when the flour from its dry state is manufactured,  
 “ as a sack of flour prepared in this way has been known to  
 “ produce upwards of ninety loaves. This process removes in  
 “ a certain degree any stale or bad smell the wheat may have,  
 “ expedites the ripening of the flour for the baker, and the  
 “ bread from it requires less baking by at least twenty minutes.  
 “ It may also be observed that the bran, sheelings, and sharps  
 “ are lighter, and the parings barer than flour dressed in  
 “ the usual way.”

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 14 (*third series*)  
 p. 340; London Journal (*Newton's*) vol. 3 (*conjoined series*), p. 211.]

A.D. 1834, January 1.—No. 6536.

SHARP, THOMAS, and ROBERTS, RICHARD.—(*A communication.*)—This invention, relating to the construction of machinery adapted to the grinding of corn and other substances, consists in a peculiar arrangement of the two grinding surfaces, whether they be composed of stone or otherwise. Both stones or surfaces revolve, but their centres of rotation are not coincident, each being on a separate axis or centre disposed relatively excentric. The patentees say, “the modes of mounting these  
 “ grinding surfaces and of driving them, as well as the materials  
 “ of which such surfaces are made, admit of considerable  
 “ variations, that is to say, the bearings by which such stones  
 “ or other grinding surfaces are supported, and the mechanism  
 “ by which they are driven, may be formed or constructed in  
 “ several ways, and the grinding surfaces themselves may be  
 “ of natural stone or artificial stone or of metal, or any other  
 “ fit material.” In one example of the grinding mills exhibited and described, the larger grinding surface is horizontally actuated by the vertical axis on which it is fixed, and in another mill it is vertically disposed on a horizontal axis; in both, one stone or grinding surface is smaller than its companion, and being excentric thereto is rotated by the friction of the larger surface.

[Printed, 1s. 4d. Drawings. See London Journal (*Newton's*), vol. 5 (*conjoined series*), p. 345; Rolls Chapel Reports, 7th Report, p. 149.]

A.D. 1834, June 24.—No. 6632.

LYMAN, JOHN CHESTER.—(*A communication.*)—This invention, relating to the construction of a machine designed for hulling, cleaning, or polishing rice, bearding or peeling barley, and hulling or cleaning coffee consists in the employment therein of a pair of circular disc “polishers” placed face to face one above the other in horizontal position, after the manner of disposing the grinding stones of a grist mill. The upper disc is fixed on the top end of a vertical shaft that passes through the lower disc, and is driven by bevel gearing beneath, the lower disc being firmly supported upon a frame or platform. The contiguous surfaces of the two discs are respectively made of wood and covered with “strong card teeth of metallic wire set in “leather,” which is nailed or otherwise fastened to the wood, and thus is formed to each disc a true surface of metallic points. The grain passes from a hopper into a trough, that conveys it into a central opening in the upper disc, and whilst the upper disc is working from 80 to 120 revolutions per minute it finds its way between them, and is thrown out at their periphery into a circular case which encircles the discs, and is thence conveyed away through a spout. After this operation the grain is passed through screens or sieves to separate from it the meal and broken grains, and it is finished by passing it through a brushing cylinder into barrels or other packages.

[Printed, 6d. Drawing. See Repertory of Arts, vol. 4 (*new series*), p. 270; London Journal (*Newton's*), vol. 8 (*conjoined series*), p. 305.]

A.D. 1834, September 13.—No. 6676.

BERRY, MILES.—(*A communication.*)—This invention, relating to the grinding of wheat and other grain, consists in the peculiar construction of the mill, which may also be employed for removing the husk or shell from hemp or other seed, and also the husks from oats and paddy or rough rice, the grinding surfaces being suitably prepared according to the nature of the work.

The grinding surfaces of the mill are capable of adjustment as regards their relative distance apart, by means of eccentrics in combination with sectors furnished with graduated scales and indicators, which shew the quality of meal that any special adjustment will produce. The grinding of the grain is effected

by passing it between two surfaces suitably prepared for the purpose, viz., the external surface of a revolving cylindrical stone, and the concave surface of a stationary or bed stone, the hollow curved surface of which corresponds in size with an arc of 90° of the periphery of the grinding cylinder, and is brought into or nearly into contact therewith, according to adjustment required for producing the desired quality of flour or meal.

The mode of mechanically adjusting the distance apart of the grinding surfaces may be effected in various ways, and the mill is actuated by means of driving bands or otherwise.

[Printed, 1s. 4d. Drawings. See London Journal (*Newton's*), vol. 6 (*conjoined series*), p. 276; Rolls Chapel Reports, 7th Report, p. 155.]

A.D. 1835, August 10.—No. 6878.

**HEBERT, LUKE.**—This is an invention of a flour or grinding mill, wherein the under or grinding surface of a circular stone that revolves on a vertical axis, is employed in conjunction with the upper or grinding surface of a fixed circular stone or bed, the grinding surfaces of the two stones respectively being cut or channeled in the usual way. The most prominent features in the arrangement of the machinery consists in the use of an annular plane of fine wire gauze, which is horizontally fixed round the stationary grinder, and “to the upper” or rotative grinder are attached brushes, which as they revolve sweep over the wire gauze, causing the flour to fall through it, and the bran, pollard, or other particles that are too gross to pass through the same to be swept over the surface in spiral or curved lines, till by the continued centrifugal action of the brushes they are projected through a hole at the circumference either out of the machine or on to another and coarser tissue of wirework for making any further separation of the residue of the meal that may be desired.” The grinding surfaces may, instead of stone, be constructed of metal, such as malleable cast iron or steel, the principal grooves or furrows in the grinding surfaces being formed in the casting process.

The grain is fed to the mill from a hopper; the finest quality of flour falls into a receptacle beneath the fine wire gauze, and the residue is thrown out and received on a screen, which



in one modification is acted upon by an endless band of brushes, that separate the different qualities of flour from the pollard and bran.

[Printed, 1s. 2d. Drawings. See *Mechanics' Magazine*, vol. 25, pp. 65 and 306; *Engineers' and Mechanics' Encyclopedia*, vol. 2, p. 150.]

A.D. 1837, May 30.—No. 7382.

BLAKE, JAMES PARTRIDGE.—This invention is entitled “certain improvements in machinery or apparatus for hulling, cleansing, preparing, or dressing paddy or rough rice, hulling, dressing, and preparing oats and such other grain; part or parts of which are applicable to other purposes.”

[No Specification enrolled.]

A.D. 1837, November 25.—No. 7486.

CORDES, JAMES JAMIESON.—This invention relates to the construction of the mortars employed in conjunction with pestles for dressing rough rice or paddy, the object being to cause more friction of the grains against each other. This result is effected by cutting a series of inclining grooves or indentations round the interior of the mortar, so as to produce a rough toothed surface that will hold those grains of rice which come in contact therewith and so cause additional friction of the grains against each other when the pestle descends and causes the rice to rise.

By this means (it is stated) the dressing of the grain is effected in a shorter time, and by a diminished number of strokes of the pestle, than is the case when mortars with smooth surfaces are employed.

[Printed, 6d. Drawing.]

A.D. 1838, March 19.—No. 7594.

HORSFIELD, WILLIAM.—This invention relating to the constructional details, and the mode of working and feeding mills employed in grinding grain, consists in, as applied to mills having the driving apparatus below the millstones, a method of carrying or driving the top or running stone by a cross-armed iron frame, called the adjusting carrier, whereby (it is stated) the stone may be so fixed, adjusted, and held, that its equilibrium is perfect when in full motion. The adjusting

carrier engages with an annular plate, fixed concentrically round the upper surface of the running stone, to which it is bolted, and has four recesses made respectively equidistant to receive one of the arms of the carrier, which is jointed in a particular manner to the central part that receives the upper end of the mill spindle.

Another grinding mill is described, embodying the same principles of construction, but having the driving gear placed over head above the running stone, instead of beneath the stationary stone.

The parts of the feeding apparatus, which acts centrifugally are made in halves when applied to mills with overhead gear in order when required, to facilitate their removal without disturbing the mill spindle; and the arrangement of the details of the apparatus differ materially when applied to a mill so driven, as compared with a mill driven underneath. There is also a double feeder adapted to large mills, and a lever, a connecting wire, and an index to indicate in a lower or other apartment, the quantity of grain which is fed into and passes through the mill.

[Printed, 1s. Drawings. See London Journal (*Newton's*), vol. 15 (*continued series*), p. 296. Rolls Chapel.]

A.D. 1840, September 24.—No. 8647.

DEAN, ALEXANDER, and EVANS, EVAN.—This invention relates to the constructional details of horizontal mills employed for the purpose of grinding grain and other produce; to a malt mill; and to apparatus for dressing or bolting ground substances, which apparatus may be placed either in combination with a grinding mill, or be worked separately.

The grinding process is effected by the surfaces of earthenware or porcelain plates, grooved or dressed in segmental sections similar to millstones, excepting a margin within their circumferential periphery, which margin is left plain on both the running and the stationary grinding plate, and relatively nearly in contact, being only kept apart by the ground substance passing between as it approaches the edge of the plates, and is thereby further reduced or pulverised. A brush attached to the periphery of the running plate, sweeps round



the mill case and delivers the grain through an aperture, which may be placed either in communication with a bolting apparatus, or a separate receptacle. There are modes of adjusting the distance apart of the plates, a contrivance for discharging the coarsely ground substances, and a hopper with feed regulator.

The chief feature in the bolting apparatus, is the form or position of the revolving brushes which rub the flour through the gauze covering of the cylinder or trough. The brushes are variously fixed in spiral directions round the central revolving part of the dressing apparatus. The different qualities of flour and the pollard are separated, and when required, the bolting apparatus may be fed direct from the grinding mill.

The malt mill is in some respects a modification of the grinding mill, excepting that the grooves are made on the bevelled circumference of the running plate, which works within the bevelled edge of a circular opening made in a plate fixed to the framing of the mill.

[Printed, 6s. 4d. Drawings. See *Mechanics' Magazine*, vol. 34, p. 286; *Inventors' Advocate*, vol. 4, p. 212; *Rolls Chapel*.]

A.D. 1841, September 23.—No. 9098.

SCOTT, GEORGE.—This invention relates to the construction of the dressing cylinders of flour mills, and to an apparatus designed for regulating the rotary speed of the dressing cylinder.

Instead of fixing the circumferential ribs of the dressing cylinder (to which the wire gauze lining is attached) respectively at a right angle to the axis of the cylinder, they are fixed to the longitudinal ribs of the cylinder frame in a spiral direction, for the purpose of obviating the undue wearing of the gauze, caused by the pressure of the brushes close to the rings or annular ribs. The different qualities of wire gauze are secured edge upon edge by bands of thin metal.

The apparatus devised for retarding and regulating the speed at which the dressing cylinder rotates, is a kind of pendulum, which rocks two pawls that engage alternately with the teeth of a pallet wheel.

[Printed, 6d. Drawing. See *Mechanics' Magazine*, vol. 35, p. 273.]

A.D. 1842, March 21.—No. 9299.

**PARKES, ZACHARIAH.**—This invention relates to the construction of what are denominated domestic or steel mills, adapted to the grinding of wheat; and to combining with such mills a dressing apparatus.

The mill is made of iron, casehardened, and has a tapering barrel, wherein is concentrically fitted to revolve on its axis, a conical grinding roller, arrangements being made for adjusting, by a longitudinal movement of the grinding roller, the annular interspace between its surface and the interior of the barrel, which as also the surface of the roller, is tooth grooved or channeled in the usual way, the handle by which the mill is operated being fixed on the axis of the grinding roller. After the grain is ground, it falls into what is called the dressing apparatus, which consists of a fixed cylindrical skeleton frame that is lined with wire gauze, and is placed in an inclining position beneath the mill. Passing concentrically through the gauze cylinder there is a revolving spindle or shaft, whereon brushes are so fixed, that they rub against the wire gauze when the shaft revolves. The wire gauze is divided into sections respectively differing in fineness of texture, the finest quality covering the upper end of the cylinder, the medium occupied the midlength, and the coarsest the lower end, and directly beneath each section is a separate receptacle or bin. The ground grain falling into the upper part of the cylinder is rubbed by the brushes over the finest gauze first; this separates the first quality of flour, which falls through the gauze into the bin beneath; the midlength of the cylinder which is covered with a gauze a degree coarser, takes out the second quality of flour, and through the coarse gauze at the lowest end passes the pollard and sharps, the residue or bran being delivered from the cylinder end.

[Printed, 6d. Drawing. See Record of Patent Inventions, vol. 1, p. 140.]

A.D. 1842, September 15.—No. 9471.

**BOWLES, FREDERICK.**—(*A communication.*)—This invention relates to the process and to the machinery employed in the preparation or manufacture from all kinds of grain and potatoes.

of flour for making starch, bread, biscuits, and pastry according on the following scientific dictum, viz.:

1st. That gluten or fibrin as the base of farinaceous fermentation is indispensable in the making of good bread, and that the greater the quantity, so in proportion is the quality of the bread improved; as expressed by "Chaptal;" in the "Dictionary Technological of arts and trade," and in the "works of Monsieur Thénard."

2nd. That potatoes, rice, and maize, contain no gluten, and will not make bread unless mixed therewith or with matter that contains it. (See "Chaptal; Baker's Manual").

3rd. That the farina of the potatoe, and farine generally, is very nutritious, also the residue of potatoes which, independently of the parenchyma, contains when dry 75 per cent. of farine that has not been extracted. " (See Vanquelin; Cadet "devaux) in his collections on the Province of Charante, and "Monsieur Ganai in his Memoirs to the Chambers."

4th. That "the tearing or breaking off the envelopes of "the small globules which contain the farine, and reducing "it to an impalpable state, gives it the power of absorbing "more water than in its natural state. (See Berzelius, and "the Dictionary of Industry)."

The invention comprises the process of, 1st, separating by a machine with the aid of cold water, the starch from the gluten without putrid fermentation. 2nd. Separating by a machine the farine from the residue after removing the skin, so as to utilize all parts of the potatoe in the making of bread, biscuit, &c. 3rd. Preparing the farine by machine or by chemical means, to render it as perfect for bread as the flour of wheat, and cause it to absorb sufficient water for that purpose. 4th. Preparing the residue of potatoes by chemical means to prevent it drying or giving out its carbon. When by the aid of machinery the residue is reduced to flour, that product is used for making bread and sea biscuits.

The machines and apparatus employed in the process, and which are described and illustrated, consist of:—The washing cylinder; the peeler; the potatoe rasp; metallic sieve; the bruising machine; the mill for grinding or bruising; starch extracting machine; and the general arrangement of all the apparatus combined for work.

*(Printed, 2s. Drawings. See London Journal (Newton's) vol. 22 (conjoined series), p. 376; Rolls Chapel.)*

A.D. 1842, December 15.—No. 9557.

POOLE, MOSES.—(*A communication.*)—This invention relating to the process of dressing or cutting the furrows in the grinding surfaces of mill-stones, consists of an apparatus for holding, guiding, and regulating the bill or cutter, by the aid of which (it is stated) much less skill is required in the operation, and the dressing is performed with greater regularity, by means of a frame, having at one corner a coupling to receive a temporary axis which is to be fitted concentrically into the eye of the stone by wedges or otherwise. This frame covers or incloses beneath it one set of furrows, or one segmental portion of the grinding surface of the stone contained between two radii, and in this position it is fixed by a wedge forced between a hanging lip on the frame and the periphery of the stone. As usual all the furrows in each section run tangent to the eye of the stone and relatively parallel. The sides of the frame support a carriage that slides thereon lengthwise of the furrows, and carries the bill or cutting tool, which by means of a screw may be shifted to any position across the frames as required to suit the breadth and distance apart of the furrows. The bill or cutting tool is worked along the lines of furrows separately by means of a lever in the hands of the operator, the lever carrying the tool holder which is attached to its free end, and being moved along the cutting point of the bill is made to strike into the surface of the stone by a succession of blows.

[Printed, 1s. 8d. Drawings. See Repertory of Arts, vol. 2 (*enlarged series*), p. 74; Rolls Chapel.]

A.D. 1843, January 19.—No. 9596.

HEBERT, LUKE.—This invention relating to the process of grinding and dressing grain and other seeds, berries, and substances, refers to three mills or machines in which the operations of grinding and dressing grain are combined; also to other apparatus adapted to grind coffee and spice, tea, bark, gorse or furze, crush oats and malt; an apparatus for separating farina from roots and bulbs and the juice from fruits, and to a mill-feeder.

The grinding and dressing mills.—The operating parts of these mills are all placed upon one horizontal rotating shaft.



whereon at one end is fixed a circular grinding plate of metal, to act against a similar grinding plate fixed to the stationary framework. The feeding hopper delivering the grain in regulated quantity by means of a slide, is placed in communication with a cylindrical passage inclosing the shaft end and leading through the stationary grinder to the grinding surfaces, the grain being carried through the passage by a helical blade fixed on the inclosed part of the shaft. The ground grain or meal is thrown out from between the grinders at their circumferential periphery, where the grinding surfaces are in close contact. Thence the meal enters the dressing cylinder, the lower longitudinal half of which is made of wire gauze in separate sections differing respectively in degree of fineness, and through which the ground product is rubbed by brushes attached to an inner cylinder, which is concentrically fixed upon and revolves with the shaft, there being separate receptacles to receive the different qualities of flour and the pollard, the bran falling out at the end of the dressing apparatus. The three machines are all constructed to act upon the same principle, but the form of some of the parts is changed and the details modified.

The coffee and spice mill is nearly similar in construction to one modification of the grinding mills, and may be used either with or without the sifting apparatus.

The tea mill is for the purpose, by means of a cellular surfaced revolving cylinder and fixed knife, of cutting or breaking up the long leaves and stalks, and afterwards separating the product into different degrees of fineness by a cylindrical sifter.

The bark mill is furnished with three strong revolving cylinders and knives, so placed horizontally one above another that, after feeding the uppermost, the bark broken by it falls upon the second which breaks it into smaller pieces, and thence the material falls upon the lower cylinder, which further reduces and renders it fit for tanning purposes.

The apparatus for separating the farina or starch from potatoes, arrowroots, and other similar substances, and for reducing and expressing the juice from fruit, operates by means of a revolving conical rasper, fed from a hopper formed above *by unfolding the lid of the case, the material being gradually pressed against the operating surface of the rasper by a fixed*



concave guiding piece, is afterwards brushed through a sifter and the fibrous matter separated thereby.

Grinding gorse or furze is effected in a machine having two toothed conical rollers horizontally placed in reversed positions relatively, and acting respectively in succession upon the material in conjunction with two fixed serrated conical segments or concaves.

The mill feeder consists of a revolving roller mounted in an opening at the bottom of the hopper, and having four deep longitudinal grooves, that receive the grain in quantity regulated by a cylindrical shell, which is slid into position upon the roller, so as to cover more or less of the grooves.

[Printed, 2s. 8d. Drawings. See Rolls Chapel.]

A.D. 1843, March 1.—No. 9648.

**BELL, GEORGE.**—This is an invention relating to the construction of two machines, designed, one for drying malt, corn, or seeds, and the other for bolting, dressing, and sifting flour and other substances.

The drying apparatus which (it is stated) will dry grain more uniformly and in less time and at less cost than is incurred by the ordinary process, consists of two sheet metal cylinders, placed one within the other, which latter is much larger, so that they form between them an annular chamber the ends of which are closed. Both cylinders are composed of or covered with sheet metal finely perforated, and they revolve, not on an axis common to both, but upon rollers or wheels whereon the outer cylinder rests. The grain to be dried is placed in the interspace between the cylinders, and heated air is forced by a fan or otherwise through it; the air upon being introduced into the inner cylinder, finds a passage through the perforated metal and is diffused amongst the grain, passing through it, and carrying off through the perforations in the outer cylinder, the vapour which is generated, the rotation of the combined cylinder being kept up during the operation.

In the bolting and dressing apparatus is combined two sieves, one horizontal and the other cylindrical. The former is of fine wire texture and circular; it is fitted with a rotating brush which rubs the finest flour through the sieve, to which a jolting motion is imparted by the mechanism. The ground

grain is fed into the sieve near the centre, and that portion which cannot pass through the sieve gradually finds its way to the outer edge, whence it is swept into a trough that conducts it to the cylindrical sieve, which is covered with wire gauze in three sections respectively differing in closeness of texture, for the purpose, as the meal passes through, of separating in succession the second, and third qualities of flour, and the pollard and sharps from the bran. The sifting cylinder is also caused to joggle, and as in the case of the drying cylinder it rotates upon the rollers or wheels which support it.

[Printed, 10d. Drawings.]

A.D. 1843, April 27.—No. 9714.

COTTERILL, CHARLES FORSTER.—(*A communication.*)—This invention relating to apparatus employed in the manufacture of flour, consists in :—A machine for cleaning smutted grain; an apparatus for feeding and supplying grinding mills; a mode of adjusting the bed stone of a mill; a contrivance for throwing mill machinery out of gear; and to adapting dressing machines to the axes of horizontal mills.

Smutting machine.—The damaged grain falls from a hopper mounted concentrically upon a plate that forms a cover to a revolving stone, horizontally fixed upon a vertical axis. The top surface of the stone is furnished with a close arrangement of serrated grooves, and fixed projecting through radial slots in the covering plate, are brushes which press upon the grain, and as the latter gradually finds its way over the grooved surface of the stone from the centre to the circumference, the attrition caused by the brushes rubs off the smuts and impurities. The grain falls off the outer edge of the stone into a conical dresser, where it is operated upon by brushes fixed to a skeleton frame, which is attached to the plate that carries the stone and moves round with it. A current of air from a fan drives off the smut and dust, and the cleaned grain falls through a delivery spout.

The mill-feeding apparatus is of the usual construction, excepting the means employed for adjusting the tube or pipe, which is effected by a screw instead of a forked lever.

Adjusting the bedstones of mills. The mill bedstone is mounted in a circular metal frame furnished with projecting

lugs having inclining under surfaces, which rest upon other inclining surfaces formed upon projecting pieces attached to the mill frame. When the bed stone requires raising, its metal frame is turned by a screw in one direction, and in the contrary direction when the stone requires lowering, the rotation of the stone being prevented by the screw when the mill is at work.

The mode of throwing mill machinery out of gear is effected by a screw, which causes by means of keys, the driven bevel wheel to slide longitudinally on the mill axle, so that its teeth come out of gear with the teeth of the companion bevel, which is fixed on the driving shaft.

The gauze cylinder of a dressing machine combined with a horizontal grinding mill, is made coniform and is concentrically fixed beneath the bed stone, and revolving brushes, attached to and carried round by arms projecting from the vertical axis of the mill, brush or rub from the meal the flour through the gauze, as the ground substance falls thereon from the stones. The flour is removed from the outer surface of the gauze by scrapers attached to an annular rack, which by means of a toothed pinion is caused to revolve round the dressing apparatus at a slow speed.

[Printed, 2s. 8d. Drawings. See Rolls Chapel.]

A.D. 1843, July 10.—No. 9828.

PARSONS, GEORGE, and CLYBURN, RICHARD.—This is an invention of three machines or apparatus designed for beating, cleansing, and crushing various animal and vegetable substances. It consists in:—

1st. A machine adapted to cleanse fibrous substances, such as wool, cotton, silk, &c., and also under certain modifications, of thrashing wheat, oats, beans, and other seeds and grain. The novel feature of this machine consists in “the employment of conical rotating fans or beaters, such fans or beaters being made to revolve within a conical case, and between which case and the rotating fans or beaters, the wool, cotton, or other material intended to be cleansed is introduced.”

2nd. “A peculiar apparatus designed for cleansing or separating corn or other grain from chaff, inferior seeds, or other matters required to be extracted therefrom; the

“ novelty of this part of our invention being the employment  
 “ of a rotary fan or blower of peculiar form and construction,  
 “ by which the air in this instance is caused to pass through  
 “ the machine in the direction of the axis of the fan, and the  
 “ essential character of such fan or blower consists in so  
 “ forming the vanes thereof that they shall be of greater  
 “ radii on that side of the fan where the air is discharged than  
 “ on that side at which it is admitted.”

3rd. A machine “ applicable to the crushing of oats, beans,  
 “ malt, and other vegetable or animal substances which may be  
 “ required to be broken or crushed, the peculiar novel feature  
 “ of which machinery consists in the employment of a pair or  
 “ several pairs of rollers having flutes or grooves formed  
 “ round their peripheries parallel to the ends of such rollers.”

[Printed, 3s. 2d. Drawing. See London Journal (*Newton's*), vol. 24 (*conjoined series*), p. 323.]

A.D. 1843, August 25.—No. 9876.

CORCORAN, BRYAN.—(*A communication.*)—The nature of this invention consists in a mode of introducing currents of air between the grinding surfaces of the mill stones ordinarily employed in flour mills, for the purpose of keeping such grinding surfaces constantly cool, as also the grain or substance whilst it is being ground.

Cut through the upper mill stone there are, relatively at right angles, four radial slotted apertures, down which to between the grinding surfaces, the air is caused to pass by four inclining fans or hoods, respectively fixed, one to the “ back edge of each slot. As the stone revolves the fans “ gather the air which, by the resistance of the surrounding air is directed by the hoods and driven down the apertures, and by this resistant pressure is caused to enter and find its way along the grooves in the grinding surfaces of the stones, which are thereby kept to a uniform degree of coldness, as also the substance which is being ground.

[Printed, 6d. Drawing. See London Journal (*Newton's*), vol. 25 (*conjoined series*), p. 181.]

A.D. 1844, February 24.—No. 10,069.

STUDLEY, FRANCIS.—This invention relates to the construction of a mill for grinding grain, which process is effected between two metallic grinding surfaces, one rotating and

the other fixed, and respectively convex and concave. The rotating grinder is formed upon a circular wooden block or wheel, encircling which is a hoop or band of steel, having its outer surface turned to a perfect circle and so grooved or serrated as to form a series of cutting edges crosswise, in the direction of its axis, which rests in suitable bearings and carries, fixed upon one end, a spur wheel, that is engaged by a pinion, on the spindle of which the handle is fixed that actuates the mill. The opposite or concave grinder is adjustably fixed in front of the rotating grinder, and covers about one-sixth of its circumference, being truly curved to correspond to the arc of the latter, and having its hollow or inner surface grooved or serrated in the same manner as the rotating grinder, only that the series of serrations or teeth lie in the opposite direction. The grain is fed from a hopper through a spout into what is called a valve, whence by means of a string under the control of the attendant, it is regulated and allowed to fall between the grinding surfaces. Obliquely slung beneath the mill is a wire dresser or sifter, to which a suitable jerking motion is imparted by the mechanism. This sifter separates the different qualities of flour from the pollard, all of which fall through it into different receptacles beneath, the bran passing over its lower end.

[Printed, 6d. Drawing. See *London Journal (Newton's)*, vol. 25 (*conjoined series*), p. 320.]

A.D. 1844, April 30.—No. 10,165.

GORDON, ROBERT.—This invention relates to a process of cooling grain during the process of grinding, by forcing air through the eye or centre of the mill stones, to between them and into the channels and grooves which are formed on their grinding surfaces; it also consists in forcing air into and through machinery employed for dressing flour. The atmosphere is forced by a fan into a chamber, whence in a constant current it is conducted by pipes in the direction required, stop-cocks being interposed to regulate the supply. The inventor says, "the advantages derived are, first, the cooling  
" and keeping down the temperature of the grain or other  
" substance submitted to the grinding operation; and, second,  
" the more completely cooling of the flour or meal during the  
" dressing process . . . . The power required for driving



“ the stones is much decreased, and the produce of the flour  
“ and meal or other substance greatly increased, while the  
“ colour of the flour or meal is improved by the low tempera-  
“ ture at which the grinding proceeds.”

[Printed, 8d. Drawing.]

A.D. 1844, October 22.—No. 10,360.

RANSOME, FREDERICK.—This invention relates to the manufacture of artificial stone for grinding and other purposes. In this process is employed a solution of silica, to act as a cement for forming into a solid mass, particles of broken or granulated stone, sand, and other mineral or metallic matter. The silica, or what is termed the silicious cement, is (as stated by the inventor) prepared in the following manner:—

“ I dissolve one hundred pounds of crystallized carbonate of  
“ soda, usually called sub-carbonate of soda, or, in commerce,  
“ frequently termed merely soda, in about fifty gallons of  
“ water. I then render the carbonate of soda caustic in the  
“ usual and well-known manner by means of lime; or, instead  
“ of carbonate of soda, I employ about fifty pounds of carbo-  
“ nate of potash, usually called pearlash, and the requisite  
“ quantity of water, and render it caustic by means of lime.  
“ The caustic alkaline solution I reduce to about twenty or  
“ twenty-five gallons by heat; I then put this caustic alkaline  
“ solution, with about one hundred pounds of finely broken  
“ flints or other convenient siliceous substance, into an iron  
“ boiler or digester, and heat the mixture during ten or twelve  
“ hours up to a pressure of about sixty pounds to the square  
“ inch, frequently stirring the mixture. When the mixture is  
“ sufficiently incorporated, which will readily be ascertained  
“ by the workman after a little experience, it may be removed  
“ from the boiler or digester and passed through a suitable  
“ sieve, by which any undissolved stone may be removed from  
“ the paste or cement. The cement is then fit for use, or may  
“ be tempered to any required consistency by the admixture  
“ of sand or finely powdered flint; I generally use for the pur-  
“ pose calcined flint, and if too thick for the purpose the same  
“ may be reduced by adding water. For manufacturing mill-  
“ stones for grinding, I take of the siliceous cement one part,  
“ of finely powdered flint or powdered pipe clay one part, and

“ of fragments of burr or other suitable stone three or four  
 “ parts, which is regulated by the size of the fragments,  
 “ which should be as uniform and free from dirt or earthy  
 “ matter as possible. The above ingredients are to be well  
 “ mixed and incorporated together, when it may be com-  
 “ pressed in iron moulds under mechanical pressure. When  
 “ the stone thus formed is removed from the mould it is to be  
 “ allowed to dry at common temperatures for about twenty-  
 “ four hours, when it may generally be removed into an oven  
 “ or drying room where the temperature is to be gradually  
 “ raised to that of boiling water, or even beyond that point.”

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 6 (*enlarged series*), p. 41; London Journal (*Newton's*), vol. 26 (*conjoined series*), p. 307; Mechanics' Magazine, vol. 42, p. 441; Practical Mechanics' Journal, vol. 4, p. 273; Engineers' and Architects' Journal, vol. 8, p. 169; Artizan, vol. 4, p. 100.]

A.D. 1845, January 21.—No. 10,487.

TARVER, JAMES.—This invention relates to the construction of a machine in which are combined and mounted in one frame, apparatus for cutting hay, straw, and other produce into chaff by means of knives radially attached to a fly wheel, and apparatus for grinding or crushing vegetable substances.

The chaff-cutting section of the machine, consists of a trough wherein the hay or other material is laid, and is drawn thence out at one end at a uniform speed by a pair of feeding rollers, which are actuated by a worm wheel fixed on the axis of one of the rollers and engaged by a worm on the shaft of the fly wheel, that also carries the handle and two curved knives, which are adapted to two opposite arms of the wheel suitably curved to receive them. After the straw leaves the feed rollers, it passes under a pressing board at the exit end of the trough, and is sliced off by the knives which, as the fly wheel rotates, cut transversely through the mass alternately every revolution of the wheel.

The grinding or crushing apparatus is placed on the other side of the fly wheel shaft, the axis which carries the crushing roller being placed parallel therewith, and is actuated thereby by means of tooth wheels, one on the fly wheel shaft, and the other, which is capable of being slid in and out of gear, is mounted on the mill axis. The grinding or crushing roller

has a conical form, its circumferential surface is furnished with a close arrangement of serrated or bevelled grooves, it rotates in a chamber of corresponding form, and is grooved in a similar manner, the grooves inclining in opposite directions. By means of a crank handle fixed on the back end of the mill axis, additional power may be applied to the machine.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 6 (*enlarged series*), p. 235; London Journal (*Newton's*), vol. 27, (*conjoined series*), p. 99; Rolls Chapel.]

A.D. 1845, January 28.—No. 10,502.

ROSE, EDWIN.—This invention relating to the constructional details of machines employed respectively for cleaning grain from smuts and other impurities, for grinding grain, for dressing or bolting ground grain, for crushing grain preparatory to grinding, and to the apparatus or proof staff employed for setting millstones, consists in:—

1st. Producing a current of air in a smutting machine by means of vanes fixed upon the axis of the machine, and rotating therewith.

2nd. Giving audible intimation when any interruption or cessation in the supply of grain to a grinding mill occurs, by means of an alarum, which rings a bell.

3rd. Raising by means of a helical spring and depressing by means of a lever, a revolving dished plate, adapted to the feeding pipe of grinding mills, either of a progressive or of ordinary construction, for the purpose of regulating and determining the quantity of grain fed or supplied to the grinding surfaces.

4th. A feeder adapted to the lower pair of stones of a progressive mill, is a modification of the mode of feeding described in the preceding part.

5th. Dressing machines. Instead of using a few long brushes in these machines, which are fitted with coniform cylinders, employing a larger number of small brushes spirally arranged; communicating rotary motion to the conical sieve which is supported by a tubular ring, and employing a revolving brush outside to clear the minute interstices of the sieve externally.

6th. The crushing of grain preparatory to grinding is effected by three rollers, one a large roller, against the surface of which the other two press in succession, and there is a

scraper that cleans the latter rollers, and is brought into position by a weighted lever. The material to be crushed is delivered from a hopper in quantity regulated by a roller spirally grooved.

7th. In the centre of the proof staff employed for setting millstones, is introduced a metallic tube, for the purpose of preventing the warping of the wood whereof in two thicknesses laid relatively crossway of the grain, the staff is composed.

[Printed, 2s. 2d. Drawings. See Rolls Chapel.]

A.D. 1845, July 21.—No. 10,776.

BROUGHTON, WILLIAM. — This invention relating to the construction of mills for grinding grain and other substances consists in imparting to the stones a continuous horizontal reciprocating movement relatively in contrary directions, instead of the usual rotary motion. The stones are imbedded in rectangular metal frames or boxes, which are caused to slide to and fro on suitable bed frames by means of cranks and connecting rods jointed to the frames, which have a slight inclination sideways, sufficient to cause the gradual gravitation of the ground meal, which falls from between the lowest side of the stones, into a suitable receptacle beneath. The grain is supplied from a hopper above the mill, and thence falls into a trough, to which a shaking motion, more or less active according to the quantity required, is imparted by the machinery; and by this means the supply, which falls between the stones is regulated. Arrangements are provided for adjusting the inclination of the stones, and in some cases one of them may be stationary, or both may be set in motion when required.

[Printed, 1s. 6d. Drawings.]

A.D. 1845, December 22.—No. 11,014.

HESELTINE, SAMUEL, junior.—(*A communication.*)—This is an invention of apparatus contrived for dressing the stones employed for grinding grain and other substances. The cutting bill or chisel is placed in a socket fixed at the end of an arm connected to a saddle piece which forms a support for the right arm of the operator, who actuates the chisel or “thrift” with his right hand whilst with his left hand he regulates the movement of a carriage, that slides horizontally by degrees along



the frame of the apparatus, which rests upon the surface of the stone, one segmental section whereof is dressed before the frame is shifted, the separate lines or grooves in each section being dressed in succession. Means for setting the moving arm or part of the apparatus which carries the chisel so as to cause every portion of its cutting edge to come fairly in contact with the stone, are provided, as also a contrivance for regulating each succeeding line of cut, so that all the lines or grooves in each segmental section of the stone are relatively parallel. The apparatus is operated by manual labour.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 29 (*conjoined series*), p. 174; Patent Journal, vol. 1, p. 133.]

A.D. 1846, February 11.—No. 11,084.

NEWTON, ALFRED VINCENT.—(*A communication.*)—This invention relating to the process of grinding grain and other substances, refers first, to a method of drawing or forcing the pulverized material from between the stones or grinding surfaces as soon as pulverisation is effected, and by this means the grinding surfaces are kept comparatively free, so that a larger quantity of grain or material may be ground in a given time. Second, to a method of introducing heated air between the grinding surfaces of mills, when grain or substances containing moisture are in process of being ground.

The forcing of the fine particles of the grain as soon as it is reduced to flour from between the stones is effected by either fans or air pumps which produce a constant current of air, that is forced between the grinding surfaces in radiating streams from the centre to the circumference. By thus carrying off the flour as it is produced, the grinding surfaces are kept clear, which is not the case when the flour is carried round over the face of the bed stone until it is pushed out by that which follows.

When heated air is forced radiatingly between the grinding surfaces of the stones, it is either drawn from a heated chamber or through pipes disposed in the flues of an adjacent furnace.

[Printed, 6d. Drawing. See Repertory of Arts, vol. 8 (*enlarged series*), p. 369; London Journal (*Newton's*), vol. 30 (*conjoined series*), p. 13; Patent Journal, vol. 2, p. 620.]



A.D. 1846, March 25.—No. 11,149.

SMITH, CHARLES.—The objects and uses of the numerous contrivances, processes, and apparatus described in the eleven sections into which this invention is divided, are really multifarious, and generally do not belong to this series of Abridgments. There is however to be found in the eleventh section the description of an apparatus contrived for the purpose of mashing, pulverizing, or grinding pulpy vegetable matters in either a moist or dry state; also a mill adapted to the grinding of coffee and other substances.

The mashing and grinding apparatus operates by means of a roller with a rasping or roughened surface, acting in combination with a bent plate also rough on the surface presented to the roller, which is horizontally mounted to revolve in a covered box or case, the lower part of the plate, which surrounds a portion of the roller, being raised and pressed more or less into contact with the roller by the short end of a lever, that carries on its longest end a suitable weight. The inclining bottom of the hopper, which contains the vegetable substances, is in two parts called the hopper planes, having their upper ends hinged to the case, and to the lower end of one is fixed the top edge of the concave plate, and the lower edge of the other serves to scrape the roller and carry a brush, that also assists in removing the crushed or pulpy matter which adheres. The roller is turned by a handle.

The coffee mill is constructed to operate by means of a similar roller in conjunction with a concave plate or block, having also a roughened surface prepared for grinding hard substances. To form this roller a number of small circular saws of corresponding size are placed and pressed close together side by side upon a central axis, on one end of which the handle for turning the mill is fixed. The roughened hollow surface of the concave is presented to the roller and so pressed forward by a thumb screw that the lower part of the concave is brought more or less in contact with the roller, according to the degree of fineness the coffee is required to be ground.

[Printed, 8s. 6d. Drawings. See London Journal (*Newton's*), vol. 29 (*continued series*), p. 356; Rolls Chapel.]

A.D. 1846, April 25.—No. 11,176.

ASHBY, WILLIAM.—This invention relates to the constructional arrangements of flour dressing machinery, the gauze covered cylinders of which are, instead of being placed and worked in on inclining position, disposed vertically or nearly so, and (as stated by the inventor) in consequence of the alteration, “I find it necessary or advisable to drive the brushes at a higher velocity than they generally are when the ordinary arrangement of apparatus is employed, and which I am enabled to do at much less power than is generally required, as the meal does not offer so much resistance as when the cylinder is placed in nearly a horizontal position. I also propose to cause the cylinder to move round on its axis, as I find this movement facilitates the operation of dressing. The flour, when forced through the wire meshes or interstices of the sides of the cylinder, falls down on to revolving tables, and is from them removed by a suitable instrument into receptacles conveniently placed to receive it.”

[Printed, 1s. 2d. Drawings. See London Journal (*Newton's*), vol. 30 (*conjoined series*), p. 94.]

A.D. 1846, June 6.—No. 11,239.

TAYLOR, JOHN.—This invention relating to the constructional arrangements and details of flour mills, consists in :—

1st. Introducing air between the grinding surfaces of the stones, and for this purpose are made continuous openings or channels in the grinding surface of the upper stone, commencing in a curvilinear direction round the eye, and gradually expanding respectively into the form of a volute scroll. Communications or open vertical passages are made through from the upper surface of the stone into the curved channels, and over the top or mouth of each of these passages is fitted a kind of hood to gather and direct the air into and down the several passages when the stone revolves, and by this means the heating of the stones is prevented, and the flour is not deteriorated.

2nd. Introducing air into the cylinders employed for dressing flour through an aperture made near that part of the cylinder or hopper which is termed the shoe and where the flour is admitted, so that the air enters the cylinder with the flour and commingles therewith.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 9 (*enlarged series*), p. 145; London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 409; Patent Journal, vol. 2, p. 491.]

A.D. 1846, August 18.—No. 11,342.

BOVILL, GEORGE HINTON.—(*A communication.*)—This invention, having for its object an improved mode of grinding or manufacturing wheat and other grain into meal and flour, consists (as stated by the inventor) in :—

1st. “ Closing the eye of the running [stone, by which currents of air above the pressure of the atmosphere may be introduced or forced between the stones, and in such a manner that the meal is delivered from between them in a cool state, and the operation of grinding is carried on in a more rapid manner.”

2nd. “ The application of ventilating vanes or screws at the centre of the stones, for supplying the air between the grinding surfaces.”

3rd. “ The application of blades to the peripheries of running stones for producing by a fan action the necessary current between the grinding surfaces.”

4th. The application of double stone hoops or cases for condensing and separating the dust or stive from the air and avoiding the waste of meal.”

The pressure of the air when introduced between the stones is greater than the ordinary pressure of the atmosphere.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 9 (*enlarged series*), p. 202; London Journal (*Newton's*), vol. 32 (*conjoined series*), p. 349; Patent Journal, vol. 2, p. 702; Exchequer Reports, vol. 11, p. 718; “Times” Newspaper Dec. 21st, 1854; Law Times, vol. 26, p. 312.]

A.D. 1846, October 2.—No. 11,389.

WEILD, WILLIAM.—This invention, relating to mills for grinding, consists in :—

1st. The constructional arrangement and combination of the operating and other parts of upright hand mills, adapted to the grinding of coffee, pepper, mustard, indigo, and other substances, with a view to afford more facile means for putting the parts together or taking them asunder, and also means for more readily adjusting the cutters, whether for coarse or fine grinding. Several fancy designs for these mills are exhibited.

2nd. Cutting the teeth of the grinding surfaces of mills by means of machines instead of by hand as heretofore, and whereby the grooves or furrows in grinders or surfaces so produced, are made more accurately and expeditiously, and the

grains of the material or substances ground or reduced by them, approach nearer to a uniform size. This tooth or grinder cutting machine is minutely described and illustrated, the cutter being fixed on the projecting end of a revolving mandril mounted in suitable bearings on the frame of the apparatus, the grinding part or surface to be operated upon being presented to the cutter by an apparatus or holder capable of a variety of adjustments, in order that the cutter may operate and cut grooves upon the grinder in any required direction, and to any desired depth or form.

[Printed, 1s. 4d. Drawings. See Patent Journal, vol. 2, p. 768; Rolls Chapel.]

A.D. 1846, November 5.—No. 11,442.

MABERLY, FREDERICK HERBERT, BRANWHITE, THOMAS, and LUSHER, DENNIS.—This invention relates to various subjects and matters, comprising the construction of flour dressing machines; windmill sails; wheels adapted to railways and other purposes; brakes and brake carriages; driving carriages by springs combined in a box and so arranged, that the eyes of the spring nearest the middle are smaller than those nearest the outside, so that each may be wound up separately, including amongst other things, a mode of changing the direction of the driving wheel.

The mode of driving by means of a peculiar arrangement of springs, is also (it is stated) applicable to chaff-cutting machines and to pumps, the gravitation of a counterbalance fixed on one of the wheels, being availed of and placed to come in as auxiliary aid when cranks are turning their centers, or when machines otherwise require assistance.

Windmill sails are brought under control and kept in and out of the wind by a jointed tail and other contrivances, and by such means the action of the mill is either retarded or accelerated.

Flour dressing machines are constructed with one or more horizontal sieves, and a rotating horizontal brush frame, to which the brushes are attached and work above the sieves so as to brush and rub the flour through them, that portion of the ground material which will not pass the sieves being carried round to a spout hole and there expelled. The height of the brush frame is capable of being adjusted by a screw,

and in what are called "double machines" other sieves are placed below, where the operation is repeated. These machines may be driven either by motive power or by hand.

Adapting ball and cup or socket joints to the coupling or connecting together of railway carriages.

[Printed, 1s. 4d. Drawings. See Patent Journal, vol. 3, p. 34; Rolls Chapel.]

A.D. 1846, December 1.—No. 11,468.

PINEL, JACQUES FRANÇOIS.—This invention, relating to the introduction of constant currents of air between the grinding surfaces of mill stones, consists in:—

1st. Fixing equi-distant on the top surface of the upper or running stone, five bell-mouth tubes. These tubes lie upon the stone with their mouths near its outer edge, and opening in the direction the stone rotates. Near the central eye of the stone the small ends of the tubes, which are bent downwards, pass through perforations in the stone and reach to between the grinding surfaces, where their extreme ends are turned outwards, so that the air which enters their bell-mouths and passes down them when the mill is in operation, may be directed to between the grinding surfaces, and thence radiate in streams towards the circumference of the stones, and not only carry with it the ground product, but keep the grinding surfaces cool. The bell or horn shaped mouths of the tubes, and the outward turn of their inner ends, are the chief novelties relied on.

2nd. Relates to an arrangement of tubes for carrying off the air, which is charged with moist vapour when it leaves the grinding surfaces; also to separating therefrom, and providing a passage for the products of the mill.

[Printed, 6d. Drawing. See Repertory of Arts, vol. 10 (*enlarged series*), p. 19; Patent Journal, vol. 3, p. 53.]

A.D. 1847, February 8.—No. 11,571.

GEDGE, JOHN.—(*A communication.*)—This invention relates to a method of watering grain which is shipped from foreign countries in a very dry state. The process is generally effected by the use of a watering pot, the grain being spread over a floor. The chief object of the inventor is to employ such means as will distribute the water more



equably and uniformly, and to this end the grain having been cleansed from dirt or stones, is fed in regulated quantity to a hopper by cups or scoops fixed on an endless chain. From the hopper the grain falls down a long tube connected thereto, and at the bottom of the tube it comes (as it falls) into contact with numerous fine jets of water, through which it passes and enters a spout that conveys it into a cylinder covered with thin perforated sheet metal. The cylinder very slightly inclines from the horizontal, and is caused to revolve by a strap pulley on its axis, so that the grain is tossed about by its rapid rotation, and the moisture either becomes absorbed or is thrown off centrifugally through the perforations in the cylinder's shell. By this means the grain is rendered fit for grinding, and the apparatus may be placed contiguous to the grinding mill.

[Printed, 8d. Drawing. See London Journal (*Newton's*), vol. 31 (*continued series*), p. 192; Patent Journal, vol. 3, p. 268.]

A.D. 1847, October 14.—No. 11,901.

NEWALL, ROBERT STIRLING.—This invention relates to the manufacture of mill stones or "grinding plates" having grinding surfaces composed of alternate hard and soft substances. It is described by the inventor as follows:—"I take a circular  
 " plate of cast iron, about eighteen inches in diameter, and  
 " fasten it on the end of a shaft about three feet in length,  
 " which projects through the plate about an inch. The plate  
 " is then faced up truly at right angles with the shaft, and on  
 " it I form a tight spiral roll of alternate layers or strips of  
 " hoops of steel, iron, or other metal; but I prefer steel, and  
 " of coarse paper, cotton, braid, or other suitable substance,  
 " the hoops being about an inch and a half in width, and  
 " about one-sixteenth of an inch in thickness. And the pitch  
 " of the spiral next the centre of the plate being about one-  
 " sixteenth of an inch, and gradually decreasing to within  
 " three inches from the circumference, which latter space is  
 " kept at a pitch of about one hundredth of an inch. These  
 " proportions must be varied according to the nature of the  
 " substance to be ground. This forms the lower or driving  
 " plate. The upper one is formed in a similar way, the spiral  
 " being laid in the reverse direction, and the shaft being about  
 " eight inches in length, and hollow, to allow the substance  
 " to be ground to pass down it from the hopper to between

“ the plates. The two plates are arranged in a frame in such  
 “ a way that the faces of the spirals are parallel to each other,  
 “ and the centre of one plate distant about an inch and a half  
 “ from the other. The distance between the two plates is  
 “ adjustable by means of a key under the brass footstep of the  
 “ lower shaft, so that they may be made to grind coarser or  
 “ finer. I apply motive power to the lower shaft, and the friction arising from the process of grinding gives motion to  
 “ the upper plate which then revolves in the same direction  
 “ as the lower. I recommend that both plates should be of the  
 “ same diameter. The advantage of this form of plate is, that  
 “ as the surface bears down in grinding a continual fresh  
 “ cutting edge is presented.”

For the purpose of grinding the husk off rice, and for similar work, plates with spirals formed of alternate strips of leather and cotton braid or felt, are employed.

[Printed, *4d.* No Drawings. See London Journal (*Newton's*), vol. 32 (*conjoined series*), p. 280; *Mechanics' Magazine*, vol. 48, p. 388; *Patent Journal*, vol. 4, p. 575.]

A.D. 1848, January 18.—No. 12,030.

SEWELL, THOMAS ROBERT.—The object of this invention is to produce certain marketable preparations of flour, that may be moved from place to place for several weeks without deteriorating their quality, and may subsequently be made into bread without the use of yeast. The process consists in taking for preparation No. 1, 280 lbs. of flour, which is placed in a tub or circular vessel furnished with a rotating agitator, the arms whereof so stir up and disturb the flour, that fresh portions are constantly being brought to the surface. Suspended immediately above the axis of the agitator, is a glass vessel communicating with a reservoir by a glass tube, through which hydrochloric acid from the reservoir passes into the glass vessel, and thence is distributed over the surface of the flour in the form of spray. In this way 45 oz. of the acid, having a specific gravity of 1.14., is incorporated with the flour, which when this part of the operation is complete, is removed from the tub, sifted through a fine sieve, and then packed in barrels for sale or use.

For preparation, No. 2, the process is the same as No. 1, to which is added 39 oz. of bicarbonate of soda in a state of fine

powder, and any other ingredients known to improve the flavour of bread may be added. This preparation is then sifted and packed for use.

When No. 1 is made into bread, to every pound weight thereof is to be added 63 grains of bicarbonate of soda in fine powder; it is then kneaded with cold water; and may be put in the oven at once or within an hour or two.

No 2 preparation only requires to be kneaded with cold water.

[Printed, *8d.* Drawing. See London Journal (*Newton's*), vol. 33 (*conjoined series*), p. 256; Artizan, vol. 6, p. 249; Patent Journal, vol. 5, 302.]

A.D. 1848, February 8.—No. 12,058.

HEBERT, LUKE.—This invention relates to a variety of contrivances adapted to the construction of mills employed for reducing, grinding, and sifting bark, sugar, coffee, seeds, and other substances.

1st. Describes a combined arrangement of the grinding surfaces of a coffee and seed mill, the revolving grinder whereof has all the coarser grooves on the external surface of a cylinder, and the finer grooves on the plane or side surface of a ring which fits thereon, the stationary grinder or case which receives the revolving grinder being shaped and grooved to correspond, so that the breaking or coarse grinding is effected by a cylindrical grinder within a horizontal case, and the fine grinding by the vertical surfaces of the rings in combination therewith.

2nd. Refers to a particular mode of adapting to each other the grinding surfaces of conical mills, in order that when recut they may still retain relatively a working position, and (as in the former case) the coarser grooves are made in the casting, and the finer grooves in rings of wrought iron hardened and fitted thereon.

Describes and illustrates a combined conical mill and sifting machine on one horizontal axis. The brushes which are adjustable have their tufts placed in oblique rows.

A mode of so mounting the conical grinding surfaces of upright and horizontal hand mills, that the hopper and stationary grinder are held by the same fastenings and removable together.

Two machines for sifting, and reducing tea.

Employing auxiliary weights to increase the efficiency of edge stones.

Describes several sieves revolving or vibrating horizontally or inclined, and of various forms, with blades or appliances for gradually moving the material over their sifting surfaces.

The invention also relates to the construction and special application of mortars and pestles; to a cylindrical spice grater; a machine for reducing roots and other substances, operating by means of a revolving grater; and two raw-sugar mills.

[Printed, 1s. 2d. Drawings. See Patent Journal, vol. 5, p. 296.]

A.D. 1848, March 8.—No. 12,086.

ROYCE, GEORGE.—This invention relating to apparatus for depositing or sowing corn and seed; to machinery for cleaning grain and seed; to machinery for grinding grain; and to an apparatus for testing or gauging the surface of millstones, consists in:—

1st. The seed sowing or depositing apparatus, which does not belong to this series of Abridgments and will be found described in the vol. relating to "Agricultural Implements."

2nd. The machine for cleaning corn and seed is so arranged vertically, that by means of a fan, the incoming air is constantly withdrawn from a lower chamber into the interior of the revolving wire gauge cylinder, and passing amongst and through the grain, carries away the impurities which are rubbed off the grain by beaters that are attached to the cylinder and keep it in constant motion, the outer fixed cylinder being formed by a close arrangement of feather-edged bars.

Describes a second grain-cleaning machine, which operates by means of three horizontal shaking sieves, respectively differing in size of mesh, and mounted one above another in a frame that is set in motion by a small rapidly revolving crank, the coarsest sieve, which detains the chaff, being uppermost.

Another cleaning machine with a sieve, such as is usually employed for what is called "reeing," is also described. The



sieve in this machine is violently shook by a rapidly revolving crank, and as the impurities rise to the surface at the center of the sieve, they are drawn off by an air current.

3rd. Grinding mills, in which there is a special mode of combining apparatus for connecting or transmitting motion from the mill axis to the upper or running stone by means of a three-armed driver, acting against adjustable blocks.

Facing millstones.—In connection with this process, the invention supplies a contrivance for gauging the surface of the stone, and marking those full and prominent parts which require further chipping away or reducing.

[Printed, 2s. 4d. Drawings. See Patent Journal, vol. 5, p. 433; Rolls Chapel.]

A.D. 1848, August 14.—No. 12,239.

HENDERSON, JAMES.—This invention relates to the process and also to apparatus designed for cleaning and polishing rice, pearl barley, and other grain and seed, by means of an emery surface. The cleaning and polishing cylinder has an iron skeleton frame, which is covered with canvass stretched tightly over it and fastened, the ends being of wood. The external surface of the cylinder is covered with coarse emery, made to adhere to the canvass by glue. The external size of this cylinder is 2 ft. 6 in. in diameter, and 2 ft. 8 in. long. It is concentrically placed within an outer cylinder, which is covered with wire gauze and is closed at the ends. The internal diameter of the outer cylinder is about 2 ft. 9 in., so that an annular inclosed space is formed all round the inner or polishing cylinder about  $1\frac{1}{2}$  in. broad. The outer cylinder is preferred to be stationary and slightly inclined from a horizontal position, and the axis of the inner cylinder passes concentrically through its ends. In that end which is raised an opening is made to receive the grain from a hopper. There is also an opening in the lower end through which the rice or grain is, when finished, discharged by raising a slide. When in operation, the inner cylinder makes about 200 revolutions per minute.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 15 (*enlarged series*), p. 116; London Journal (*Newton's*), vol. 34 (*conjoined series*), p. 116; Mechanics' Magazine, vol. 50, p. 165; Artizan, vol. 7, p. 183; Patent Journal, vol. 6, p. 208.]



A.D. 1848, August 22.—No. 12,254.

NEWTON, ALFRED VINCENT.—(*A communication.*)—The object of this invention relating to apparatus contrived for the purpose of dressing or clearing grain preparatory to the grinding process, is to completely separate the bran or covering from the kernel before grinding, in order in the first place to avoid the cutting up or grinding any portion of the bran with the farina, which specks the flour and materially lessens its value, and also with the bran all impurities are removed, and nothing is left for flouring but the kernel.

The bran is first removed from the kernel by the application of moisture which when applied in the form of water, from thirty to sixty seconds is sufficient, or when steam is employed, the corn is passed in revolving conductors through a vapour chest. In both cases the moisture (it is stated) is absorbed by the outer coating or bran only, the moisture being repelled by the fine inner skin in which the kernel is inclosed. The wheat is, whilst moist, passed to an attrition box, where the bran is rubbed off or disengaged, and driven off by a current of air. The wheat is then placed in a box or chamber heated by a current of hot air and furnished with revolving gauze conductors for carrying the grain, which gives out whatever amount of moisture it may have absorbed during the previous process. The grain is then subjected to further attrition in a dry state, in order to remove all the adhering filaments of bran that may remain, care being taken not to break the kernels. After a second fanning process the wheat in its purest form is considered ready for the grinding mill.

[Printed, 10d. Drawing.]

A.D. 1848, October 12.—No. 12,283.

ASHBY, JOHN.—This invention relating to machines contrived for cleaning grain, and for dressing meal, consists in:—

1st. The grain cleaning machine, which is similar to the corn screen or smut machine ordinarily employed, but instead of covering the cylinders with the ordinary wire gauze, a material is provided composed of vertical angular rods, attached in sets of two or three together by strips of sheet iron interlaced between, like basket work, the bars being sufficiently close together in their arrangement, that the grain cannot pass

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through. The refuse matters separated from the grain are carried off by an upward current of air supplied or exhausted by a fan.

2nd. The wire gauze cylinder of the meal dressing machine is mounted in a case after the manner described by William Ashby in the Specification of his Patent, dated April 25, 1846, No. 11176, and within the cylinder fixed on a rotating axle or shaft, is a brush which revolves rapidly with the shaft, and is for the purpose of clearing or brushing the flour centrifugally through the wire gauze covering of the cylinder on to two revolving tables or floors, the upper receiving the first quality of flour, and the lower the middlings, as is understood. An opening is made in the side of the case reaching down to the level of the first table, and over, so as to cover the opening, is a pipe leading to an exhausting fan which, by revolving at a high speed, draws a constant current of air through the cylinder. A brushing apparatus designed for keeping the outer surface of the cylinder free, and the meshes or interstices of its gauze covering open is employed, the bar which carries the brushes having a to-and-fro motion endwise, and lateral liberty to rock when the latter and the longitudinal ribs of the cylinder come in contact.

[Printed, 1s. Drawings.]

A.D. 1848, November 16.—No. 12,328.

ADAMS, SAMUEL.—This invention relates to the construction of metallic mills, adapted to grind coffee, malt, and other similar substances. It is applicable to either horizontal or vertical mills, and consists in forming the grinding surface of the moving cutter on the bevelled periphery of a thick metal plate that revolves within a slightly bevelled circular opening formed in a plate that constitutes the fixed cutter. Upon the bevelled edges of both cutters are grooved teeth (by preference of steel) formed in the usual way, and at close intervals all round the revolving cutter are fixed projecting pieces with inclining under surfaces, which ride over and press the coffee or other substance downward, into the wedge-formed annular space between the cutters or grinding surfaces, which gradually approach each other and have their lower edges in contact. The running or moving cutter is fixed on the vertical

axis of the mill, and above it, also fixed on the axis, is a bevel wheel that engages with a companion bevel fixed on a horizontal shaft, which receives motion from a handle applied to one end, there being on the other end a fly wheel. The revolving cutter carries a conical shield, that covers the bevel wheels, and conducts the coffee or substance as it descends from a hopper into the annular space over the projecting incline pieces, between which it gradually falls as the grinding progresses.

In vertical mills no gearing is required or employed, the revolving cutter being fixed on a horizontal shaft that, on its two ends respectively carries the handle and the fly-wheel; no shield is required, and the general construction and form of the mill is necessarily modified.

[Printed, 3s. 4d. Drawing. See Repertory of Arts, vol. 14 (*enlarged series*), p. 85; London Journal (*Newton's*), vol. 36 (*conjoined series*), p. 251; Mechanics' Magazine, vol. 50, p. 477; Patent Journal, vol. 7, p. 71; Rolls Chapel.]

A.D. 1849, January 16.—No. 12,424.

MCCLELLAN, CAREY.—The object of this invention is to improve the ordinary mode of introducing currents of air between the grinding surfaces of mill stones whilst in operation, in order that the stones and the grain during the grinding process may be kept cool. The use of the ordinary hopper is discontinued, and the pipe through which the air is conveyed to the eye of the running stone, is availed of for feeding the mill. The air is forced by an ordinary fan through a regulating valve into what is termed a damsel, fitted to the eye of the stone and revolving therewith, and thence it is conveyed down the eye by four branch pipes towards the grinding surfaces, and passes between them in a continuous stream whilst the stones are in operation.

The mill is fed through the damsel by a cup feeder from an ordinary feed pipe furnished with a regulator for supplying the required quantity of grain.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 35 (*conjoined series*), p. 20; Mechanics' Magazine, vol. 51, p. 67; Patent Journal, vol. 7, p. 173.]

A.D. 1849, February 13.—No. 12,475.

NEWTON, WILLIAM EDWARD.—(*A communication*).—This invention relates to the constructional details of a machine adapted to hulling, cleaning, and polishing, rice, and other

grain and seed. The main feature of the machine is a skeleton cylindrical frame, lined inside with wire gauze, and having inside it a revolving rubber, which moves round in a contrary direction to the cylinder. The end of the cylinder at which the rice is introduced from a hopper between the rubber and the gauze covering of the cylinder, has the form of a frustum of a hollow cone. The rubber consists of two rows of brushes, the points whereof nearly but do not quite touch the gauze, and the external surface formed by the points of the bristles is so regulated, that the rice may freely enter between. One or more rows of paddles interposed between the rows of brushes, carry the rice through the machine; these are called "inclined feeders;" they project radially from the axle of the rubber, and act on the grain like the threads of a screw. One or two pieces or blocks of india-rubber are adapted to the feeding end of a machine intended only for cleaning and polishing, but to a machine designed for hulling, cleaning, and polishing, a greater number of the india-rubber blocks of double length respectively are required. The finishing polish to the rice is imparted by lambswool, prepared on the hide for the purpose of securing it to the stock of the rubber

[Printed, 8d. Drawing. See *Mechanics' Magazine*, vol. 51, p. 163; *London Journal (Newton's)*, vol. 35 (*conjoined series*), p. 401; *Patent Journal*, vol. 7, p. 193.]

A.D. 1849, March 5.—No. 12,506.

BANKS, SAMUEL.—This invention relating to mills for grinding wheat and other grain consists in combining an apparatus therewith for the purpose of more effectually causing the introduction of air currents between the grinding surfaces, thereby to facilitate the escape of the ground grain, and keep the grinding surfaces cool; also in the use of tubes and chambers for the passage of the ground grain and the air, which leaves the grinding surfaces charged with the finest of the ground particles. The air current is carried through the eye of the upper stone or runner, by means of what is termed "an air collector" that is fixed on the upper surface of the stone and furnished with arms or vanes all radiating obliquely in one direction from the common center. The air collector and upper running stone are covered with a case, through a radial slot in which, the air is drawn inwards by the vanes and directed to the eye of the runner. The passage through the

radial slot may be closed more or less by a slide, for the purpose of regulating the quantity of air admitted.

After the ground grain has been deposited in the closed annular space surrounding the bed stone, it is collected by girating gatherers or scopes attached to the periphery of the running stone, into down spouts, the air current pressing in the same direction, but escaping upwards afterwards, whilst the ground grain continues to descend into a trough or receptacle, and very little it is stated escapes as dust into the mill.

[Printed, 10d. Drawing. See *Mechanics' Magazine*, vol. 51, p. 237; *Patent Journal*, vol. 7, p. 239.]

A.D. 1849, March 14.—No. 12,510.

SMITH, JOHN.—This invention relates to the process of manufacturing from oats, flour suitable for making bread, biscuit, or pastry. It is described as follows:—"Oats are to be first dried, divested of the husk, and then be ground in the same manner as wheat has been heretofore ground when for making flour therefrom. And I would state that I have not found it necessary or desirable to make any alteration in this part of the process. The oats having been ground, the products are to be subjected to a dressing engine or machine. And I have found that in dressing oat flour, in order to accommodate the process to the peculiar character of the grain and flour, that the engine should revolve at a greater speed than is usually practised when dressing wheaten flour. And I have found it desirable that there should be an agitator in the feeding hopper to keep the ground products agitated as the same are fed into the dressing engine."

In the engine or machine described as suited for dressing oat flour the wire gauze covering is not so fine in texture as the gauze used for dressing wheat flour. The cylinder of the machine is driven at about 600 revolutions per minute. Internal brushes are used, but they scarcely touch the wire gauze, which is in annular sections respectively differing in fineness of texture. About 8 inches round the axis at the lower end, the cylinder is left open for the passage of air, and in the feeding hopper there is an agitator.

[Printed, 6d. Drawing. See *Repertory of Arts* vol. 14 (*enlarged series*), p. 276; *Mechanics' Magazine*, vol. 51, p. 234; *Patent Journal*, vol. 7 p. 263.]



A.D. 1849, June 5.—No. 12,636.

BOVILL, GEORGE HINTON.—This invention, relating to the constructional details of flour or grinding mills, consists in:—

1st. Making the bed or under-stone rotate, in lieu of the upper one as heretofore. “The grinding surfaces being perfectly true to each other can never come in contact when the bed stone has been lowered in the slightest degree from the upper one, and the injury caused by the running stone resting upon the other, and destroying the grinding faces when short of feed on the old system, is entirely avoided; the delivery of the meal from between the stones by the centrifugal action is much quicker; the corn and meal being upon the revolving stone are actuated outwards more rapidly than if rubbed outwards by the furrows of the top stone, as heretofore.”

2nd. An arrangement for ventilating the grinding surfaces of mill stones, the air being introduced through the stationary top stone, either by forcing or exhausting.

3rd. “Exhausting the air from the cases of mill-stones, combined with the application of a blast to the grinding surfaces.”

4th. Straining or filtering the air which is exhausted from the mill-stone case or chamber, and is surcharged with fine particles of flour, through suitable porous fabrics which permit the air to pass, whilst the flour is detained.

A Disclaimer and Memorandum of Alteration, bearing date May 1, 1855, was subsequently filed by the inventor, who therein states that since the enrolment of his Specification he has been informed and believes that “causing the under or bed stone to rotate instead of the upper stone” was not at the date of the Letters Patent a new invention, and he therefore disclaims so much of his invention as relates thereto, and which constitutes the “first part,” and having done this he substitutes respectively the words firstly, secondly, and thirdly for “secondly,” “thirdly,” and fourthly, so that according to the alteration the invention consists only of three instead of four parts.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 15 (*enlarged series*), p. 167; London Journal (*Newton's*), vol. 35 (*conjoined series*), p. 411; Mechanics' Magazine, vol. 51, p. 548; vol. 65, p. 73, and vol. 66, pp. 83 and 562; Jurist, vol. 3 (*new series*), p. 817; Law Times, vol. 29, p. 194; Patent Journal, vol. 8, p. 138.]

A.D. 1849, July 9.—No. 12,702.

GOODIER, JOHN.—The object of this invention relating to the constructional details employed in the mode of mounting mill-stones, and to passing currents of air between the grinding surfaces is to lessen friction, and keep the surfaces cool.

1st. The upper part of the driving spindle above the bush in the lower stone through which it passes is made conical, and its extreme end is rounded for the purpose of carrying the gimbals upon which the upper or running stone is mounted. A socket is fitted on the conical part of the spindle, and caused to revolve therewith by a feather. Upon the rounded end of the driving spindle is a boss furnished with two pendent arms, which respectively are bent down to enter recesses under the running stone, and these arms are connected to two arms attached to the socket in such a way that, altho' the running stone is supported, it has liberty to rock slightly on the end of the spindle, and thereby avoid the friction which occurs when the running stone is rigidly attached to the spindle.

The stones are whilst working kept cool by currents of air conducted by small tubes down the eye of the runner to the grinding surfaces. The air is gathered by the open mouths of two curved tapering tubes attached at their inner ends to the small tubes at the eye of the stone, and they respectively reach out in opposite directions to the extreme edge of the stone in parabolic curves, and have their mouths turned in the direction in which the stone revolves.

[Printed, &c. Drawing. See London Journal (*Newton's*), vol. 37 (*continued series*), p. 162; *Mechanics' Magazine*, vol. 52, p. 39; *Patent Journal*, vol. 8, p. 247.]

A.D. 1849, July 12.—No. 12,704.

COTTAM, GEORGE, and COTTAM, EDWARD.—This invention relates to the construction of chaff-cutting machines, feeding grinding mills, saw frames, and to what is termed "a manu-meter."

1st. So giving motion to the feed rollers of chaff cutting machines that the length of cut may be either increased or diminished at will.

2nd. The feeding of grinding mills is effected by means of a series of cups or measures, severally fixed at regular intervals round the periphery of a circular plate, which is caused to

revolve by an endless band working upon pulleys grooved for differential speed, and fixed one on the axis of the plate and the other on the shaft which carries the handle that actuates the machine. The cups as the plate revolves dip into the grain, and are filled as they pass beneath the axis of the plate; they become inverted as they rise above it, and empty themselves into a vessel or spout, which delivers the grain to the stones.

3rd. Refers to a peculiar method of mounting a vertical saw in a saw frame.

4th. "Manumeter" for measuring and registering the force required for driving machines, either by hand or by motive power.

[Printed, 1s. 8d. Drawings. See Repertory of Arts, vol. 15 (*enlarged series*), p. 129; Mechanics' Magazine, vol. 52, p. 53; Patent Journal, vol. 8, p. 200.]

A.D. 1849, September 13.—No. 12,766.

PRETERRE, APOLEONI PIERRE.—The first parts of this invention relate to apparatus for cooking, and to vessels for making coffee or tea, a revolving cylinder for roasting coffee combined with a weighing apparatus, whereby as the weight of a given quantity of coffee is reduced by the roasting, the time when the operation is finished may be ascertained, and exactly the same degree of roasting may be received by each succeeding charge. It also relates to the construction of a coffee mill, in which a screwed collar or annular nut on the axis of the runner or grinder is employed to regulate the grinding, whether required to be fine or coarse, the axis being screw-threaded to receive it. This is an upright mill with a vertical spindle and mounted on a box stand or foundation, containing a drawer to catch the coffee as it is ground; the handle is fixed on the top of the spindle, and is moved round horizontally.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 15 (*enlarged series*), p. 193; Mechanics' Magazine, vol. 52, pp. 220 and 257; Patent Journal, vol. 8, p. 296.]

A.D. 1849, September 20.—No. 12,774.

WREN, BENJAMIN.—This invention, relating to a process of cleaning and treating certain descriptions of foreign and other wheat which partly in consequence of its hard brittle and *unclean state* and in some cases its dirty appearance and bad

smell is ill adapted for being ground into flour, consists in the use of a machine wherein four cylinders mounted on a suitable frame are in succession employed in the cleaning process. All the cylinders are actuated by bevil gearing. In the first cylinder the earthy matters and soluble particles are by the action of brushes and heated water washed off the grain, and thence it passes through a spout into the second or draining cylinder, which is covered with wire gauze, and contains a small fixed cylinder of sheet metal, which, being heated by steam, assists in drying the grain. Thence the wheat is taken to the third cylinder, which is heated by steam and contains a spirally coiled pipe, through which as the cylinder revolves the grain passes, and is delivered through a spout at the opposite end into the fourth cylinder, which is steam jacketted, and contains concentrically fixed therein a steam pipe, around which is formed a heated annular channel or passage through which the wheat passes as it is received from the coiled pipe in the third cylinder, and this last operation completes the washing and drying process.

[Printed, &c. Drawing. See *Mechanics' Magazine*, vol. 52, p. 238; *Patent Journal*, vol. 9, p. 9.]

A.D. 1850, January 24.—No. 12,939.

WESTRUP, WALTER.—This invention relates to the construction of apparatus designed for cleaning corn and grain, grinding grain, and dressing meal and flour.

1st. For cleaning corn and grain, with a view to separate from it the seeds of weeds, dust, smut balls, and other extraneous matter, an open ended cylinder, having its axis mounted in suitable bearings and its surface perforated with alternate rows of slots and round holes, is employed. This cylinder is caused to revolve within a fixed cylindrical case by an endless band actuated by a prime mover, and working round a pulley on its axis. The position of the cylinder slightly inclines from the horizontal, and the grain, which is introduced at its upper end by a series of scoops carried upon an endless band or web, is sifted whilst passing through, the offal and dust escaping through the perforations into the case, fall into a bin beneath, whilst the grain is discharged from the lowest end of the cylinder, and falling on an endless web or cloth, is carried over and falls into a hopper, and thence upon the roughened surface



of a circular convex plate, fixed on the upper end of a vertical shaft that revolves concentrically within a fixed upright cylinder, the interior of which is roughened all over like a rasp. At intervals within the cylinder, fixed one above another on the shaft, is a series of circular tables with roughened upper surfaces, upon which the grain in succession falls, and is as constantly contrifugally thrown against the rough interior of the cylinder; the grain is rubbed by brushes both upon the conical plate, and the several tables in succession as it passes from one to the other, and it is finally winnowed by a fan and sifted.

2nd. For the process of grinding corn or grain, the mill-stones, which are composed of French buhrs, have conical grinding surfaces. The lower stone, formed like the frustum of a cone, is the runner, and the upper stone being fixed is correspondingly conically hollow underneath. Two or more pairs are used, the runner of each pair being fixed on the same vertical shaft, are so arranged that the meal passes from the first to the second pair after receiving an intermediate dressing. Air is admitted to the grinding surfaces through lateral openings in the mill-shaft, which is tubular.

3rd. The machine employed for separating the bran and offal, or dressing meal or flour, is (with certain necessary modifications) similar in its construction to the cleaning machine already described.

[Printed, 1s. 4d. Drawings. See London Journal (*Newton's*), vol. 38 (*conjoined series*), p. 1; *Mechanics' Magazine*, vol. 53, p. 77; also vol. 53, pp. 132 and 151; *Engineers' and Architects' Journal*, vol. 16, p. 192; *Artizan*, vol. 10, p. 28; *Patent Journal*, vol. 9, p. 201; *Rolls Chapel*.]

A.D. 1850, January 29.—No. 12,951.

SPILLER, JOEL.—This invention relates to the construction of machines respectively designed either for screening wheat, for scouring or cleaning wheat, for grinding wheat, and cooling the mill-stones.

1st. The screening machine is used for separating from wheat the small seeds, grains, and other extraneous granules. It consists of five cylinders of uniform size, mounted and placed side by side on a horizontal plane, in a frame wherein their axes rest in suitable bearings at the opposite ends; the two outside cylinders and the centre one are plain on the surface, *but the two intermediate cylinders have each wound round*



them a wire in the form of an open spiral, and between the frame and the outer cylinders there is a packing to prevent the grain falling through. The axle bearings are adjustable as to distance apart, so that the space between the cylinders, which all rotate in one direction, may be reduced or increased as required.

Describes a second screening apparatus wherein a frame is made to oscillate rapidly, and so throw the grain as it passes down between, to and fro against their surfaces, that the smaller seed is caused to pass through the perforations.

A third screening apparatus operates by means of two cylindrical revolving sieves of different degrees of fineness, one being placed concentric within the other. The grain enters the end of the inner cylinder which retains all substances larger than the grain which passes through it into the annular space between them. Here the grain is retained and discharged at the end, whilst all the small seed and particles pass through the outer sieve or cylinder into a separate receptacle.

2nd. The scouring and cleaning of wheat is effected by a machine having a thin annular space formed between two cast iron cylinders concentrically placed one within the other, the inner cylinder which is longitudinally ribbed externally, revolving at the rate of about 700 times per minute within the outer cylinder, which is fixed and longitudinally ribbed internally, and whilst the grain is passing through the annular space, it is scoured and cleaned.

A second scouring and cleaning machine wherein the earthy matters are crushed, and through which an air current is caused to pass by a fan is also described.

3rd. The grinding surfaces of mill-stones are kept cool whilst grinding by currents of air, which are forced by a blowing apparatus through numerous holes in the running stone. Another plan consists in forcing air through channels in the bed stone, and the latter stone is also kept in a cool state by a stream of cold water running in contact therewith.

[Printed, 1s. 2d. Drawings. See Repertory of Arts, vol. 16 (*enlarged series*), p. 214; Mechanics' Magazine, vol. 53, p. 99; Practical Mechanics' Journal, vol. 4, p. 86; Patent Journal, vol. 9, p. 211; Rolls Chapel.]

A.D. 1850, January 31.—No. 12,958.

VALOCK, ETIENNE JOSEPH HANON.—This invention, relating to the construction of mills adapted to the grinding of grain.

consists in a certain arrangement for admitting air to the grinding surfaces, and when necessary to limit the supply. Cut in the grinding surface of the upper stone so as to cross the furrows, are three eccentric curved grooves, and at both ends of each groove there is a channel or passage leading through the stone to its upper side. In one of the holes of each groove is fixed a funnel-shaped hood, and turned in the direction the stone rotates, and in the other hole of each groove is fixed a cock or plug. If when the mill is at work on dry grain, and a larger quantity of air is required to be passed between the grinding surfaces, all or some of the cocks are to be closed, but generally (it is stated) to be desirable that the passages be free.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 16 (*enlarged series*), p. 147; London Journal (*Newton's*), vol. 37 (*conjoined series*), p. 84; Mechanics' Magazine, vol. 52, p. 118; Patent Journal, vol. 9, p. 211; Rolls Chapel.]

A.D. 1850, March 26.—No. 13,025.

PREECE, JAMES.—This invention, relating to the motive power employed and to the mode of adapting it to the driving or actuating of mills for grinding grain, consists in:—

1st. Adapted hand winches and toothed gear to mills known as water mills, in order that in times of drought they may be partially or wholly worked by manual labour.

2nd. Relates to the driving of hand corn mills, and mills and machines employed for crushing grain, seed, and other vegetable substances; as also lathes and other mechanism, by arranging two spur wheels to engage with one pinion, the axes of the spur wheels to be actuated by handles on each end respectively, so that the united strength of more than two persons may be employed.

3rd. Arranging the spur wheels to drive one pinion, the axis of each spur wheel to carry two handles, one on each end. In all cases instead of tooth wheels, driving bands may be employed.

[Printed, 8d. Drawing. See London Journal (*Newton's*), vol. 37 (*conjoined series*), p. 254; Mechanics' Magazine, vol. 53, p. 275; Patent Journal, vol. 10, p. 13; Rolls Chapel.]

A.D. 1850, April 5.—No. 13,033.

SEELY, CHARLES.—This invention, relating to the constructional details of mills adapted to the grinding of wheat and other grain, refers to a special arrangement of apparatus for collect-

ing air, and conducting it down to the grinding surfaces through an annular passage, formed by a short cylinder fixed concentrically in the eye of the upper stone, and revolving therewith. A flat annular case is superposed on the top of the mill-case, and in it are four tapering tubes or horns, which have their smallest ends opening into communication with the annular passage in the eye. The horns, placed equidistant, project radially over the stone, at first towards the circumference, but are so curved round in the direction the stone rotates, that they present their large open ends to receive the air which enters the case through a large central opening in the top, and fan blades in addition are fixed at a suitable angle to the free or larger open ends of the horns for the purpose of gathering more air, and thereby increase the quantity which passes through them to the grinding surfaces.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 16 (*enlarged series*), p. 281; London Journal (*Newton's*), vol. 35 (*conjoined series*), p. 240; Mechanics' Magazine, vol. 53, p. 298; Patent Journal, vol. 10, p. 35; Rolls Chapel.]

A.D. 1850, April 30.—No. 13,065.

MAY, CHARLES, and LEGGETT, ROBERT.—This invention relating to the construction of thrashing machines, and to a mode of driving them direct by steam without danger from fire; to grinding machinery; to straw cutting machines; to applying steam power direct to machines in farm buildings, and to apparatus for depositing seed in measured quantities, consists in:—

1st. Holding the bars of the concave of thrashing machines in position by means of flexible bands or rails, to which they are attached, and the diameter of the concave is thereby made adjustable. Also the pinions of the thrashing drum shaft, which receives motion at both ends, are fixed to the shaft by an elastic holding. The steam engine, which drives the machine direct, is combined with it, but the steam is conveyed through pipes from a boiler placed at a safe distance.

2nd. The operating parts of grinding mills or machines, comprise three spirally grooved or furrowed rollers placed horizontally side by side in a suitable framing. The grooves of the rollers differ in degrees of fineness, so that the middle roller and the roller on one side are adapted as a pair to the fine grinding of *oats* and small grain, and the middle roller and

the roller on the other side as a pair for grinding or crushing beans and similar substances, the hopper spout being so arranged, that by shifting its position it will deliver the grain or substance to either pair, and whilst doing so it receives a joggling motion from the mechanism.

3rd. A machine designed for the cutting of straw for littering animals, acts by means of rotating knives and claws.

4th. Relates to the relative positions of the engines and boilers employed in and about farm buildings, the boilers being located at such a distance from the engines, which in some cases are combined with the machines, that no risk of accident from fire is incurred, and as the steam is conveyed to the engines through suitable pipes, no shafting is required.

5th. The machine for measuring and depositing or sowing seed is described in the vol. of Abridgments relating to "Agricultural Implements."

[Printed, 2s. 8d. Drawings. See *Mechanics' Magazine*, vol. 53, p. 358; *Patent Journal*, vol. 10, p. 59; *Rolls Chapels*.]

A.D. 1850, May 7.—No. 13,070.

HURWOOD, GEORGE.—This invention relates to the construction of the grinding surfaces of metal mills, and to the arrangements employed for forcing a constant current of air between the grinding surfaces of mills generally, to facilitate and improve the operation.

1st. The grinding surfaces of metal mills are formed by fixing on the plain surface of cast iron foundation plates concentrically, a number of flat rings, which fit one within another. These rings are truly made of one uniform thickness in steel, wrought iron case-hardened, or chilled metal, and they are secured to the cast plates by screws sunk below the plane of the cutting surfaces, which are formed by the compression of dies on the outer face of each ring, those rings nearest the centre of motion having the coarsest serrated grooves, which in the other rings are in succession cut a degree finer, the outside ring having the finest and closest grooves, which in all the rings radiate slantingly.

Various suggestions are made with regard to the admission of currents of air between the grinding surfaces, and applications of this part of the invention to vertical, horizontal, and *conical metal mills*, are shown and described.

2nd. Relates to the ventilation of mill-stones employed in grinding corn. The air is supplied either by pumps, fans, or other convenient method, and passes to the grinding surfaces through tubular passages made through one or both of the stones from the mid-thickness in the eye, slanting outwards at an angle to the grinding surfaces of about  $45^{\circ}$ .

Special arrangements are made for keeping the air passages and the feed passages separate.

[Printed, 1s. 6d. Drawings. See Repertory of Arts, vol. 17 (*enlarged series*), p. 207; Mechanics' Magazine, vol. 53, pp. 309 and 418; Patent Journal, vol. 10, p. 68; Bells Chapel.]

A.D. 1850, June 6.—No. 13,107.

BELL, JAMES ALEXANDER HAMILTON.—(*A communication*).—This invention relates to the construction of a machine designed for dressing or removing from bran, pollard, and sharps, all the remaining particles of flour which adhere thereto after the first process of bolting or dressing. This machine consists of an outer cylindrical case of wood with internal longitudinal ribs, to which is fixed a bolting cylinder of nearly the same size, so that thin segmental spaces exist between the outer case and the bolting cylinder, within which is fitted to revolve a central cylindrical scourer and blower, the circumferential surface whereof is furnished with projecting blades and wing pieces, for the double purpose of drawing in air through a central opening in the top of the case, and heating and scouring the bran and material, which also enters from a feeding spout at the central opening at the top, and falling upon the top of the cylindrical blower, which revolves on its central axis 800 times per minute, is scattered centrifugally into the annular space between the blower and the bolting cylinder, and whilst passing down is scoured by the blades, which are radially fixed on the blower, and the wings which are fixed aslant. The particles of flour as they are rubbed off the bran, &c., are driven through the bolting cylinder, and falling down to the lower end are by the air current carried off through a spout, whilst the bran, pollard, and sharps which cannot pass the bolting cloth, gradually gravitate, and fall through conducting spouts at the bottom of the machine.

[Printed, 10s. Drawing. See Repertory of Arts, vol. 17 (*enlarged series*), p. 159; Mechanics' Magazine, vol. 53, p. 478; Patent Journal, vol. 10, p. 210 Bells Chapel.]



A.D. 1850, June 27.—No. 13,155.

FOOT, JOSEPH.—The nature of this invention consists in employing silk in the manufacture of bolters, instead of wool as heretofore, the objection to the latter material when woven, being the loose ends of the fibres which stand off from the yarn, and (it is stated) interfere with the meshes or interstices of the bolting cloth which is woven with it, and that by the use of Italian silk thrown in the manner of organzine a large quantity of flour is obtained, more twist than usual being given to the silk yarn to make it as wiry as possible. The cloths are woven tubular, by preference larger at one end, for which purpose the work at intervals is moistened in the loom with water between the reed and the breast roll, and the required width, which the cloth retains after it is dried on the roll, is adjusted by the workman as he proceeds. The head and tail leathers are attached in the usual way. Instead of using silk for both warp and weft, the warp only may be of silk and the weft of wool.

[Printed, 4d. No Drawings. See Repertory of Arts, vol. 17 (*enlarged series*), p. 166; London Journal (*Newton's*), vol. 38 (*conjoined series*), p. 246; Mechanics' Magazine, vol. 54, p. 17; Patent Journal, vol. 10, p. 151; Rolls Chapel.

A.D. 1850, July 3.—No. 13,159.

HODGE, PAUL RAPSEY.—(*Partly a communication.*)—This invention relates to the construction and working of steam engines and boilers; to apparatus for digging and cultivating land; and to other apparatus and machines respectively designed for grinding grain; separating or winnowing grain; cleansing dirt and smut from wheat; tipping rice; and to artificial millstone.

Those parts of the invention which relate to steam engines and boilers, will be found described in the second vol. of the "Steam-engine" series of Abridgments, part 1st; and the apparatus for digging and cultivating land, in the "Agricultural Implement" series.

Describes a machine for separating from wheat and barley, the long and short pieces of straw and other substances after thrashing and preparatory to winnowing. In this machine is mounted a horizontal cylindrical sieve, raised at one end and caused to revolve on anti-friction rollers. The thrashed produce is introduced at the highest end, and whilst passing

through the cylinder the grains sifts through its meshes, leaving the pieces of straw and other matter, which gradually gravitate towards and out at the lower end.

**Machine for cleaning dirt and smut balls from wheat.**—Upon the vertical axis of this machine is fixed a cylinder slightly conical and covered with pieces of cutting stone or any suitable abrading composition, and this cylinder revolves in a closed casing also lined with stone rubbing surfaces, and having a hopper at top and fine gratings at the sides, for the escape of dust and smut. The cylinder revolves at a high velocity, and whilst passing down the annular space between the rough surfaces respectively of the cylinder and of the casing, the constant attrition cleans the grain.

A machine for stripping and grinding grain, acts by means of a vertical cylinder, formed in segmental divisions of buhr or other stone or composition, its circumferential surface being cut, grooved, or furrowed for grinding in conjunction with the hollow furrowed surface of a concave block; between which and the grinding surface of the cylinder, the grain falls in regulated quantity from a hopper, and during the operation the bran is more easily stripped from it, by a to-and-fro lateral movement which is imparted to the block for that purpose. This machine is driven direct by a small oscillating steam engine.

Describes the ingredients and method of making a compound which, for the purpose of manufacturing artificial mill-stones, is subjected to double vitrification.

[Printed, 2s. Drawings. *See Mechanics' Magazine*, vol. 53, p. 478; *Patent Journal*, vol. 10, p. 162; *Rolls Chapel*.]

A.D. 1850, July 31.—No. 13,201.

**WHITE, JAMES.**—This invention relates to the constructional arrangements and details of a machine designed for bruising gorse or furze for cattle, rasping potatoes preparatory to the manufacture therefrom of potato flour, and for expressing the juice from apples and beetroot, for the manufacture therefrom respectively of cider and sugar.

The operating parts of the machine, which may be worked either by hand or motive power, consist of a pair of feeding rollers respectively furnished with projecting prongs, which lay back tangentially; and a crushing or rasping roller composed

of a close series of thin discs, with edges serrated like circular saws. These discs are so arranged on a central axis in pairs, that the teeth of one of each pair come opposite the spaces between the teeth in the other, and interposed between each pair there is a plain disc of so much smaller diameter, that an annular space is formed between the projecting teeth of the several pairs, and into these spaces the prongs or teeth of a fixed "comb," which corresponds in length to the width of the machine, are projected, one into each space. In angular position above the crushing roller but parallel therewith, is a brush which, as it revolves at a quicker speed than the roller, clears from between the teeth thereof any adherent fragments of the substance under operation. Having passed the roller, the crushed substance falls between a pair of bruising rollers horizontally disposed directly beneath. These rollers by means of tooth gearing are caused to revolve at different speeds, so that they not only crush but mash the substance which passes between them. The operating parts of the machine are inclosed.

[Printed, 10d. Drawing. See *Mechanics' Magazine*, vol. 54, pp. 119 and 121; *Patent Journal*, vol. 10, p. 211; *Rolls Chapel*.]

A.D. 1850, August 6.—No. 13,214.

CROSSKILL, WILLIAM.—This invention relates to the construction of mills designed for grinding, splitting, pulverizing, and crushing grain and other substances, shelling or removing the skin from rice and other produce; and also to mill-work or apparatus for conveying horse power to mills and stationary machines generally.

These grinding mills operate by means of metallic grinding plates horizontally disposed one above the other or lower grinding plate, which is carried upon a driving plate fixed upon the top end of a vertical mill spindle. Under this grinding plate are two studs, which fit into holes in the driving plate, and it is caused to revolve thereby. The lower end of the spindle rests in a step capable of adjustment as to height for regulating the distance apart of the grinding surfaces, and yielding when any hard foreign substance comes between them; this plate— The upper grinding plate is placed exactly lower, and is attached by studs with cross— of an annular plate that is free to plates when required to be changed

in cases where the top is the running plate, the lower plate, which is eccentric to the other, is made self adjustable to the level of the upper plate by placing it on a center or round ended stud, which is concentrically attached to its underside, and rests in a cup or socket sunk in the top end of a strong vertical screw, by which its height and the consequent distance apart of the grinding surfaces, is adjusted. Stone or other suitable material instead of metal, may be used for the grinding surfaces.

[Printed, 1s. Drawings.]

A.D. 1850, October 24.—No. 13,301.

MILLINGTON, BRYAN.—This invention relates to the construction of machines adapted to the cleaning of corn from smut and other impurities, and to the dressing of flour.

1st. The machine for corn cleaning consists of an open ended conical woven wire screen horizontally fixed in a suitable frame. An axis carrying six longitudinal fine wire brushes, passes concentrically through the cylinder, and finds bearings in the frame. The brushes are affixed to arms laterally projecting from the axis, and as the shaft revolves, they sweep round the inside of the cylinder or screen in triangular contact therewith. The grain is fed from a hopper into the small end of the cylinder, and as it passes through it is scrubbed against the screen by the brushes, which are revolved round by the axis at the rate of about 800 revolutions per minute. The smut and dirt disengaged by the process pass through the screen, whilst the grain gradually finds its way through the cylinder, and is delivered at the larger end into a receiving hopper, whence it descends in quantity regulated by a gauge, in front of a fan blower, which drives off the light substance that may still remain amongst it. The machine (omitting the fan blower) may also be used for dressing flour.

2nd. The machine proper for flour dressing consists of a conical frame of conical form, in which are placed a number of brushes, the ends of which are adapted for dressing flour are



whilst the machine is in motion. The meal comes down from a hopper, and is fed into the top of the machine close to one side in quantity regulated by what is termed "a silent feeder." The flour as it comes out through the gauze sides of the cylinder, is received on annular tables, and collected in the usual manner.

[Printed, *6d.* Drawings. See *Mechanics' Magazine*, vol. 54, p. 350; *Patent Journal*, vol. 10, p. 219; *Rolls Chapel*.]

A.D. 1850, November 14.—No. 13,348.

SHORE, THOMAS.—This invention is entitled, "an improved method of dressing flour."

[No Specification enrolled.]

A.D. 1850, November 16.—No. 13,351.

MARTIN, JOSEPH.—This invention relates to the construction of apparatus adapted to the cleaning of and otherwise treating rice and other grain, seeds, and farinaceous substances, consisting in:—

1st. The use and application of what are termed "worm cylinders" to the process. These cylinders are covered with wire gauze, which is secured to the plain periphery of two wheels. These wheels are fixed on the axis of the cylinder, one at each end. Upon the axis inside the cylinder is fixed a helical blade formed like the thread of a screw. It extends from end to end of the cylinder, and is spirally coiled about seven times round the axis, its width being nearly equal to the internal diameter of the cylinder, so that it revolves free without contact with the gauze covering. The grain is fed into one end of the cylinder, and gradually worked through it by the worm, which instead of being attached to the axis may be fixed to the interior of the cylinder. A modification, in which a portion of one end of the cylinder gradually tapers to about one half of its full diameter, is shown and described. This latter cylinder is preferred for drying.

Cleaning rice and splitting peas and similar operations, is effected by passing such substances between a serrated revolving surface of metal or stone, and a stationary surface of cork fastened on a wooden disc. Two modifications of the apparatus are shown and described, one having a rotating serrated surface of stone and the other of metal. Both are mounted on



the top of vertical spindles, and revolve horizontally. The grain is fed from a hopper through a central eye or aperture in the fixed wooden disc, and both apparatus are covered by casings.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 19 (*enlarged series*), p. 142; London Journa. (*Newton's*), vol. 42 (*conjoined series*), p. 206; Mechanics' Magazine, vol. 54, p. 417; Patent Journal, vol. 11, p. 138; Rolls Chapel.]

A.D. 1850, November 23.—No. 13,362.

BENDALL, JAMES.—This invention relating to the construction of ploughs, mills, and agricultural implements, consists in:—

1st. A scarifying machine on wheels, designed for the purpose of tilling and cultivating land, and operating by means of a number of tines, which penetrate the land, and may be raised or depressed by levers. A modification of this machine is also described.

2nd. Relates to fitting to tines and shares of ploughs and cultivating implements, false tips, which are removable, and may be changed when worn or otherwise.

3rd. A machine designed for the purpose of crushing beans, peas, barley, and other grain intended as food for cattle or other purposes. The operation is performed by a pair of toothed or serrated rollers, which are caused to revolve in opposite directions, and are capable of adjustment relatively as to distance apart. The serrations in each roller are cut in the same direction as they respectively revolve so that the cutting edges thereof are constantly meeting. Beneath this pair of rollers is a serrated roller of larger dimensions, and against the face of this roller, just below the plane of its axis, is fitted an adjustable concave stationary grinder, which is pressed upon by a regulating screw. The material is fed from a hopper fixed over the pair of rollers, and as it falls between them it is operated upon by their serrated surfaces. From them the material falls upon a larger roller, and is carried down between it and the concave stationary grinder which finishes the operation.

4th. A machine for cutting turnips and other roots, and which operates by means of cutters set fixed in a proper position upon the surface of an upright revolving cone, the roots, &c. being held during the operation by stops fixed at an angle

corresponding to the inclining periphery of the cone but not in contact therewith.

5th. Making the points of shares, tines, and those parts of agricultural implements which penetrate the land, of cast iron and steel combined in the melting and cast in chill moulds.

[Printed, 1s. 4d. Drawings.]

A.D. 1850, December 12.—No. 13,405.

ROYCE, GEORGE.—This invention relates to the construction of mills for grinding corn or grain, and to feeding apparatus applicable to machines employed in dressing and cleaning grain or seed.

1st. The grinding mill itself is of the ordinary description, comprising a pair of horizontal stones, the upper revolving on the lower or bed stone, which is stationary. Within the casing round the bed stone is an annular table, whereon the meal falls after it has passed between the grinding surfaces of the stones. Fixed to the underside of the table is an annular rack, the teeth whereof engage with a pinion that by this means causes the table to revolve round the bed stone and carry the meal against a plate, so fixed at an angle crosswise over the table, that it scrapes the meal off the table as the latter passes under it, and conducts it to an aperture which opens into a delivery spout or pipe.

2nd. A feeding apparatus applicable to the hoppers of corn dressing machines; the front of the hopper is hinged and hangs like a flap jointed to the top rail or edge, and it has imparted to it by means of weighted arms, a constant tendency to close. A roller with pins projecting from its surface at intervals all round, carries down any pieces of straw or other matters with certainty, and the size of the opening formed by the bottom edge of the flap, is regulated by a screw, knots being made in the flap to admit the passage of the pins on the roller when the flap is not open to the full extent.

[Printed, 1s. Drawings. See Repertory of Arts, vol. 18 (*enlarged series*), p. 85; Mechanics' Magazine, vol. 54, p. 514; Patent Journal, vol. 11, p. 173; Rolls Chapel.]

A.D. 1851, March 24.—No. 13,566.

FONTAINE MOREAU, PETER ARMAND le Comte de.—  
(*A communication.*)—This invention relating to the arrangement of and method of working mills employed in the process of

grinding grain, and to dressing the grinding surfaces of mill stones consists in:—

1st. Placing the driving or motive shaft in parallel position with the grinding mill shaft, and working the bolting apparatus conjointly with the grinding mill. The mill is arranged to be worked either by hand, horse, or other motive power, the first method by a handle on the end of the horizontal shaft which works by means of bevel wheels, the vertical spindle of the mill, and when driven by horse or other power, the horizontal shaft becomes an intermediate shaft, transmitting power by means of bevel wheels, from the upright driving shaft to the vertical mill spindle. The upright driving shaft also carries a pulley fixed on its upper end, and by means of a strap, it, whilst working the grinding mill, also gives motion to the bolting apparatus. A small crane is mounted on the mill and furnished with blocks and fall, for the purpose when required of lifting off the running stone. The mill is portable, and occupies but little space.

2nd. Dressing or furrowing the grinding surfaces of mill stones, in uniform divisions formed by tangents drawn from the eye of the stone, there being to each division two main furrows, one forming a tangent from the eye, and the other part of a radial line directed from the axis or center to the circumference, so that these two furrows of each section are nearly parallel; the minor furrows of each section are parallel with the tangent furrows of the preceding division; these furrows open wider into the eye in the form of a sharp curve. This method of furrowing combined with other arrangements in the eye of the stone ensure (it is stated) the passing of a constant current of cold air between the grinding surfaces.

3rd. Apparatus for cleaning and dессicating wheat. The runner and the bed grinder or cleaner are made of wood, and each is furnished with iron wire arranged tangentially on their contiguous operating surfaces, and in addition the runner carries on its periphery brushes and wings or scrapers, which bring the dust and grain round to a shoot down which it passes, and whilst falling into a sieve is acted upon by a fan carried on the mill spindle beneath the bed. Thence the grain passes in succession into other moveable sieves of different degrees of fineness.

[Printed, 1s. 8d. Drawings. See *Mechanics' Magazine*, vol. 55, p. 277; *Patent Journal*, vol. 12, p. 16; *Rolls Chapel*.]

A.D. 1851, November 13.—No. 13,810.

SHEPPARD, GEORGE.—This invention adapted to the grinding of grain and to the construction of mill-stones, refers to:—

1st. The separation of the air from the meal or ground material on leaving the grinding surfaces, with a view to save waste and inconvenience, occasioned by allowing both to pass out of the mill-stone case at the same aperture into a receiving chamber; to effect this it is proposed that two outlets from the case be provided, one at the top for the escape of the air, which is drawn through by an exhausting fan, and the other at the bottom for the delivery of the flour, the same fan being available for drawing the air from several pairs of stones simultaneously. The grain is fed through the eye of the top or running stone, to the periphery of which are fixed sweeps of a peculiar form, which carry the meal round towards the outlet shoot and (it is stated) prevent the meal rising upwards.

2nd. The object to be attained in the construction of mill stones is greater strength and durability. To this end, the annular grinding surface of each stone is uniformly divided by radial lines into fourteen equal parts or segments, representing the size and arrangement of the buhrs, fourteen of which are required to make up the grinding surface of a stone. These buhrs are bound together by iron bands placed round the periphery of the stone which they collectively form, and by this means each buhr is held firmly in its place.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 41 (*conjoined series*), p. 103; *Mechanics' Magazine*, vol. 56, p. 415; *Rolls Chapel*.]

A.D. 1851, December 19.—No. 13,867.

RANDS, CHRISTOPHER.—This invention relates to the construction, ventilation, and mode of mounting mill-stones. These mill-stones have central openings made (in the case of the upper stone) unusually large to accommodate a fan, which is worked within the eye of the upper stone by a band that passes round a pulley on its axis, and causes it rapidly to rotate, independent of the motion of the stone. The bottom stone is the runner, and both stones are suspended in gimbals, so that they mutually adjust themselves to the action of each other, and consequently their grinding surfaces work together correctly. The grain, fed in regulated quantity from a

hopper, descends a shoot and passes into the eye of the upper stone with the air which is drawn in by the fan, and with the grain is divergently distributed thereby. By adopting this method of constructing, mounting, and ventilating mill-stones, (it is stated) a considerable saving of power is effected, and the area of grinding surface is reduced by enlarging the central opening or eye of the stones. The gimbals which suspend the upper stone are exterior thereto, but those of the lower or running stone are interior, and the power required to drive the latter stone passes through them.

[Printed, 8d. Drawing. See London Journal (*Newton's*), vol. 41 (*conjoined series*), p. 171; *Mechanics' Magazine*, vol. 55, p. 514; *Rolls Chapel*.]

A.D. 1852, January 8.—No. 13,892.

**BARNETT, THOMAS.**—The object of this invention relating to the construction of mill-stones and the process of grinding wheat and other grain, is to prevent, during the process of grinding, the unduly heating of the meal or flour; to prevent over grinding or regrinding, and to grind a given quantity with the smallest amount of power.

Over-heating and regrinding is prevented by withdrawing through segmental openings in the lower stone, that portion of the meal or flour which is ground before it reaches the outer edges or periphery of the grinding surfaces. The openings in both stones are made all in a ring or circle concentric with the eye of each of the stones, those through the upper stone being coincident with the openings in the lower stone, which openings are covered with fine wire gauze, fixed level with or a shade below the grinding surfaces, and through this gauze the flour already ground is sifted from the meal, and falls through the stone into a suitable receptacle beneath. The holes in the upper stone carry brushes, which sweep round over the gauze coverings of the openings in the stone below, and on the upper surface of the top stone round the openings, are fitted air boxes or hoods, which open against the direction of motion, so as to gather air as the stone rotates, and cause it to descend with pressure upon the gauze, and also force its way beneath the grinding surfaces.

[Printed, 1s. 4d. Drawings. See London Journal (*Newton's*), vol. 41 (*conjoined series*), p. 172; *Mechanics' Magazine*, vol. 57, p. 58; *Rolls Chapel*.]



A.D. 1852, July 6.—No. 14,202.

BLAKEY, THOMAS, and SKAIFE, JOSEPH.—This invention relating to the grinding surfaces of mill-stones adapted to the grinding of wheat, refers to the form in which the furrows are cut to produce the grinding surfaces. The furrows instead of being set out in straight lines, have severally a double curved or waved form, extending separately in a radial direction from the eye of the stone to the circumference. These curved or waved channels do not intersect each other but radiate from the eye of the stone at an equal distance apart, and intermediate half furrows are cut running between them inwards from the circumference, and terminating about half the distance towards the eye; all the furrows have the same form. It is stated that the furrows so formed cause a quick delivery of the ground meal, at the same time that a current of air is drawn into the eye, and passes quickly between the grinding surfaces; also it is found by experience that grinding stones so furrowed will make flour of better quality than stones cut in the ordinary way; the offal is said to be clearer, and more work can be performed by the stones in a given time.

[Printed, *6d.* Drawing. See London Journal (*Newton's*), vol. 42 (*conjoined series*), p. 205; Mechanics' Magazine, vol. 58, p. 55; Rolls Chapel.]

A.D. 1852, July 15.—No. 14,220.

BOVILL, GEORGE HINTON.—This invention relating to the manufacture of wheat into meal and flour, and to constructional details applicable to mills for grinding, consists in:—

1st. Driving the vertical spindles of two grinding mills from large pulleys on a horizontal shaft by means of bands or straps, the mills being placed one on each of such shaft, and the direction of the bands changed by intermediate riggers or pulleys running loosely on fixed studs or axes, and placed at suitable angles for guiding the bands in the desired direction. By this arrangement all friction on the horizontal driving shaft is avoided.

2nd. Drying flour and meal by means of hot air or steam, in preference to the kiln drying process. In this process a double cased revolving cylinder, supported by arms radiating from a hollow axis is employed and placed slightly inclining from horizontality. When steam is used it enters the tubular axis at its highest end, and the condense water is carried off

at the other; the steam enters the inner case and heats the cylinder externally and the air in the outer case internally, and the air thus heated finds its way through the tubular axis into the cylinder through which the grain is passing.

3rd. Steaming flour to impart to it the degree of moisture evaporated by the grinding process. The flour is passed through a revolving cylinder into which, through its hollow axis, the steam is admitted.

4th. Cleaning wheat by washing it in a vertical cylinder and afterwards drying it by a strong current of air in a fixed vertical cylinder covered with wire gauze or perforated plate, and having inside it an axis that is furnished with fan blades that revolve at a high speed.

5th. An exhausting apparatus adapted to grinding mills having apertures through the bedstone for abstracting that portion of the flour which is ground before the meal reaches the circumference of the stones, the apertures being covered with wire gauze.

6th. Applying exhausting apparatus to mill-stones furnished with air-gathering horns or hoods, which are fixed upon and revolve with the running stones.

[Printed, 1s. Drawings. See Repertory of Arts, vol. 21 (*enlarged series*), p. 151; Mechanics' Magazine, vol. 53, p. 97; Rolls Chapel.]

## PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 1.—No. 130.

WESTHORP, ISAAC. — (*A communication.*)—This invention relating to the construction of mills adapted to the grinding of wheat and other grain, consists in :—

1st. A particular method of “hanging the millstones, by  
“connecting the driving spindle to a block which is moveable

“ on a bar across the centre of the stone, such bar being fixed  
 “ in the stone by boxes let into it, and by adjusting and  
 “ holding screws and nuts.”

2ndly. “ Withdrawing air from a trunk or chamber in communication with the case of the millstones. The external  
 “ air is thus induced to ascend the pipe down which the  
 “ ground product descends from the stones, which product  
 “ is thereby ventilated, and the dust carried up by the air is  
 “ deposited in the trunk or chamber from which the air is  
 “ withdrawn.”

[Printed, 8d. Drawings.]

A.D. 1852, October 7.—No. 290.

HORSFIELD, WILLIAM.—This invention relating to the constructional arrangement of mills adapted to the grinding of grain, consists in fixing the revolving grinding stone on the end of a horizontal shaft, so that the grinding surfaces are perpendicular, the back of the stationary stone being fixed in a sliding frame fitted against the face of the back frame of the mill and capable of lateral adjustment. The hot air generated by the friction is carried off by a tube or chimney connected to the outer case. The mill is fed from a hopper, the seed falling on to a revolving plate that is mounted on a vertical shaft, the bearings whereof are adjustable as to height, for the purpose of regulating the feed. Thence the grain descends a pipe and is first crushed between two plates contiguous to the eye of the grinding surfaces, which afterwards receive the grain. When ground the product falls from the outer edge of the grinding surfaces into a surrounding case, and is thence conveyed away by a spout beneath to any suitable receptacle.

The mill may be made to perform double work by mounting on the opposite end of the horizontal shaft another grinding stone, to act in conjunction with a stationary companion stone fixed against the opposite side of the mill frame.

[Printed, 8d. Drawing.]

A.D. 1852, October 12.—No. 354.

WALKER, JOSEPH.—(*A communication.*)—This invention relates to the construction of a machine adapted to the crushing and bruising of malt, grain, and other seeds, by means of an iron or steel grinding roller fluted spirally or longitudinally,

and mounted on a horizontal axis that revolves in suitable bearings supported by the frame work, and may be actuated either by a crank handle, strap pulley, or gearing. Contiguous to the periphery of the grinding roller is adjustably placed, a stationary concave grinding surface, which covers about one fourth of the circumference of the roller, and corresponds therewith in curvature, the grooves or serrated teeth on the roller and those on the hollow surface of the concave grinder respectively, being set in opposite directions. The grain is fed from a hopper through a valve by a fluted roller, which by means of a strap and pulleys receives motion from the axis of the grinding roller, and regulates the quantity of grain which falls between the grinding surfaces, the distance apart of which is adjusted according to the amount of crushing or bruising that the grain is required to receive.

[Printed, &c. Drawing.]

A.D. 1852, October 21.—No. 475.

CURRIE, JOHN.—This invention relates to the construction and working of mills designed for grinding wheat and other substances, and to the treatment and preparation of such substances and their products, the object being to economise the cost of grinding, and produce a superior article at a quicker rate.

The points of novelty relied on, and to which claim is made, consist in; 1st. the general arrangement of the grinding and dressing machinery. 2nd. So working mill-stones that the grain and cool air are supplied together. 3rd. Passing separate currents of air to the grinding surfaces through the eye of the runner. 4th. So arranging mill-stones as to completely surround their external and internal surfaces with a stratum of air. 5th. Filtering the air through wire cloth as it passes into the top of the mill casing. 6th. Supplying through apertures in the body of the fixed stone, cool air to the grinding surfaces. 7th. Fitting an adjustable valve in the eye of the fixed stone to regulate the air pressure. 8th. So working mills, that the heated air as it issues from the periphery of the grinding surfaces, is acted upon by separate cold currents. 9. Employing both sides or faces of the runner as grinding surfaces. 10th. The particular arrangement and construction of the mill-stones and gearing of mills wherein a runner is

employed between two fixed stones, one above it and the other below. 11th. The special mode of connecting the spindle to the runner, which is supported on a detached central ball pivot. 12th. The arrangement of mill-stones, wherein the balance ball pivot forms the supporting bearing. 13th. Working mill-stones by a spindle not connected with the bearing balance pivot of the runner. 14th. Employing a primary clearing apparatus or gauze cylinder, with vanes or brushes revolving therein, to separate unground matters from the meal or ground material prior to the dressing operation.

[Printed, 8d. Drawing.]

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## 1853.

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A.D. 1853, March 12.—No. 625.

MILLON, NICHOLAS AUGUSTE EUGENE, and MOUREN, LEOPOLD.—The object of this invention relating to the several processes of washing, drying, grinding, curing, and preserving grain mechanically, is to avoid irregularity in the process of wetting and washing the grain, and prevent, by the rapidity of the process, the moisture from reaching the kernel or heart of the grain, heated water, which is rapidly absorbed, being sometimes employed.

Before giving a description of the apparatus employed in the process, consisting of washing apparatus and a centrifugal drying machine, the inventors introduce a kind of treatise on the art of cleaning grain preparatory to grinding, and regarding its better preservation.

The washing apparatus is of two kinds, one constructed to act mechanically by means of beaters, and the other is operated by hand, in both cases the process is to be performed in a limited time, in order that the kernel of the grain may not become saturated.

The drying apparatus acts on the centrifugal principle of the hydro-extractor employed for drying purposes in many departments of trade. The grain is put into copper receptacles, which are immediately placed and fixed in position on the apparatus, that is then caused to revolve at the rate of



1,200 revolutions per minute, the system of electro-magnetic adherence being adapted to the driving section of the apparatus to prevent loss of speed. When taken out of the receptacles the grain (it is stated) should be ground without delay.

[Printed, 1s. 4d. Drawings.]

A.D. 1853, April 7.—No. 836.

WELLS, WILLIAM HENRY, MANN, EDWARD, and HARMAN, JOHN.—(*Letters Patent void for want of Final Specification.*)—This invention relating to the system of introducing air between the grinding surfaces of the mill-stones during the operation of grinding wheat and other grain, consists in (as described by the inventors) “applying to the upper surface of a mill-stone projecting fixed plates (one or more inclined to, and one or more from the centre), which cause the air to be put in motion in such manner as to pass between the hoop and the stone, and to descend with the meal down the spout, and also in such manner as to cause an extra quantity of air to pass down the eye of the stone without making holes through the stone.”

[Printed, 4d. No Drawings.]

A.D. 1853, April 14.—No. 900.

LOWE, CHARLES.—The object of this invention relating to the working of mills employed in the process of grinding wheat and other grain, is to separate from the meal and flour, the combined heated air and vapour which is generated by the friction of the stones and consequent heat caused by the rapid motion of the running stone when the mill is employed in grinding damp grain. It is found that the moist vapour will not descend the spouts from the mill case with the flour and meal, but frequently becomes condensed about the case and forms paste, and to avoid this, the case has a fine wire gauze covering, which will permit the heated vapour to pass through, but will intercept the fine particles of flour. The sides of the spouts are also made of the same material.

[Printed, 8d. Drawings.]

A.D. 1853, May 3.—No. 1083.

NEWTON, WILLIAM EDWARD.—(*A communication.*)—This invention relates to the construction of an apparatus contrived for dressing millstones, and so adapted to the spindle of an ordinary mill that (it is stated) “the stones may be dressed “ and picked without the employment of other power or “ motion than that of the revolving spindle. When the “ stones are to be dressed, the top stone or runner must of “ course be removed, and the apparatus placed on the bottom “ stone. The pick or chisel is mounted in a suitable socket, “ which is secured to a bearing which slides on a square guide “ bar, corresponding in curve to the curve of the lines on the “ stone, or if preferred, the guide may be quite straight. “ This guide bar is mounted in bearings extending from a “ central hollow shaft which surrounds the rotary spindle “ of the millstone. To this spindle is secured, in any convenient manner, a small lift wheel or tappet wheel, which as “ it rotates, acts against the lower end of an arm extending from “ the guide bar. By this means the guide bar, and consequently “ the socket which holds the pick or chisel is lifted up, and the “ latter is allowed to drop on the face of the stone. The “ attendant will, therefore, only be required to move the “ socket of the chisel along the guide bar, and the pick or “ chisel will continue to make blows on the line corresponding “ to the guide bar as long as the central shaft continues to “ revolve.”

[Printed, 8d. Drawing.]

A.D. 1853, June 3.—No. 1368.

ROBBINS, RICHARD.—(*Provisional protection only.*)—This invention relating to the constructional arrangement and details of mills employed for grinding wheat and other grain, consists in making the cases or covers of mill stones of wicker or basket work, and “ in a mode of conducting the meal from the stones “ to the troughs by means of a series of hoppers occupying the “ space between the stones & the case, whereby the meal has “ free fall, & is conducted into the spouts without being carried “ round the stones; consequently, there is no lodgment or “ waste of meal, as is the case by the system at present in use “ of conveying the meal round the stones & down one spout.”

[Printed, 4d. No Drawings.]

A.D. 1853, June 4.—No. 1374.

GYDE, JOSEPH.—This is an invention of a combined portable mill and dressing apparatus adapted by manual labour to the grinding and dressing of wheat and other grain, and suitable for the use of emigrants, voyagers, and others.

The mill-stones are disposed in a vertical position, the stationary stone being fixed against the frame of the machine. The running stone is mounted on a horizontal shaft, which passing through both stones finds suitable bearings in the frame. The grain is fed from a hopper down a vertical spout, which delivers it into the eye of the running stone. The eye is spirally grooved for the purpose of conducting the grain towards the grinding surfaces, and when ground the meal falls from the case which incloses the two stones down a funnel-shaped spout into an ordinary dressing cylinder beneath. The axis of the dressing cylinder carries a small pulley, which is set in motion by a strap that passes round the periphery of a fly spur wheel. This wheel runs loose on a spindle fixed projecting from the mill frame. The crank handle is fixed to the boss of the fly spur wheel, which is furnished with internal gearing that engages with a pinion on the mill axis. The feed is regulated by a slide, and the distance apart of the grinding surfaces is adjusted by a screw.

[Printed, 6d. Drawing.]

A.D. 1853, June 18.—No. 1498.

YOUNG, GEORGE.—This invention relating to mills employed for grinding wheat and other grain, refers to a combination of contrivances designed for causing a constant current of air to pass between the grinding surfaces from the center or eye to the circumference of the mill stones when the mill is at work. The inventor says :—“ A double tube is fixed in the eye of the  
“ upper mill stone, on the upper end of which double tube are  
“ fixed trumpet-mouthed blowers, which by the rotation of  
“ the stone drive air into the double tube, and cause it to pass  
“ between the grinding surfaces. And in order that the air  
“ may not pass back a conical leather or other packing is  
“ applied to the upper end of the double tube, through and  
“ within which the supply pipe passes and rotates ; and with

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“ a view to prevent the air passing into the case of the mill  
“ stones a conical leather or other packing is used. In addition to the air being forced in between the grinding surfaces, the air is also withdrawn from the case of the mill stone, to which, however, no claim is separately made.”

The air charged with the “stive” or fine particles is exhausted from the mill case by a fan, which drives it into a chamber where the stive settles.

The extended mouths of what are termed the “blowers” or trumpet-shaped hoods, open in the direction in which the running stone revolves, against the pressure of the atmosphere.

[Printed, 8d. Drawing.]

A.D. 1853, June 23.—No. 1533.

COOKE, MASTA JOSCELIN.—(*Provisional protection only.*)—This invention relates to the constructional arrangements and details of a mill designed for crushing bones, grain and other substances.

The chief peculiarities of such mills are the simplification of the mechanism and the special arrangement of the cutters, the form of the crushing surfaces, and those moving and other parts which effect the result intended. The mill described has a double action, the substance to be crushed when first introduced, being roughly broken between a fixed cutter and a horizontal revolving cutter plate, which is fixed on the vertical axis of the mill; thence the broken substance falls over the outer edge of the plate into a conical receiver, and therein gradually gravitates between two conical crushing surfaces concentrically placed beneath, one being on the axis to revolve therewith, and the other being attached to the mill frame, is stationary. The breadth of the space between these conical cutters is adjustable, so that the substance which leaves the mill through a delivery spout, may be crushed or ground to the degree of fineness required. The mills manufactured by Messrs. Crosskill and Company are referred to as similar in many respects, but the chief object of the inventor is to avoid friction and heating, and the consequent sticking and clogging of the mill, to which (he states) the other mills are liable.

[Printed, 6d. Drawing.]

A.D. 1853, June 24.—No. 1541.

JOHNSON, JOHN HENRY.—(*A communication from Monsieur Buïroz.*)—This invention, relating to the process of dressing flour, refers to certain contrivances or additions made to the ordinary bolting or dressing machine which is usually employed for the purpose, and consists (as stated by the inventor) “ in placing inside the conductor which conveys the ground “ matters to the bolting mill a small cylinder or receiving “ chamber, fitted with a series of projecting ribs or strips on “ its circumference running parallel with its axis. This “ cylinder has a rotatory movement given to it which is “ regulated according to the required amount of feed. The “ flour falls on the upper surface of this cylinder, and “ passes thence to the bolting machine, being allowed to pass “ through the cylinder by the revolutions of the latter. In “ order to prevent the possibility of hard and lumpy flour and “ foreign bodies, such as grits and nails, from entering the “ bolter, and thereby destroying the cloth of which it is com- “ posed, a small screen is placed at one end of the bolting “ machine, into which screen the flour passes before being “ bolted. In place of ribs of wood or metal, ribs may be “ substituted composed of a series of bristles after the manner “ of a brush, bent, without making use of the same as a brush ; “ or two plain or uneven cylinders may be fitted to revolve “ within the conductor, both their axes being in the same “ horizontal plane. In such case the feed is regulated by “ adjusting the distance or space between the two cylinders, “ which may be made to slide in bearings for that pur- “ pose.”

The advantages gained are stated to be, regularity of feed, absence of noise, and the waste of flour during its passage along the conductor is obviated; also the liability to sustain damage, to which the bolting cloth is exposed from the presence of grit, nails, and other similar causes, is removed.

[Printed, 6d. Drawing.]

A.D. 1853, July 5.—No. 1606.

BIDDELL, GEORGE ARTHUR.—(*Provisional protection only.*)—This invention relates to the construction of mills wherein rollers are employed for crushing the grain, seeds, or pulse,



the object being so to arrange the two rollers, that at the starting of the mills they shall be caused to revolve simultaneously. To this end, it is proposed to support the bearings of one of the rollers by slides which, as described "slide in slots in the side framings of the machine, there being springs or other mechanical pressure, to press the roller carried by these slides or moveable bearings towards the other roller, in order to keep the surfaces of the rollers in contact when no grain or other matter is passing between them, by which, when motion is given to one of the rollers, it will communicate motion to the other by reason of their surfaces being in contact. The distance to which the rollers may be forced apart is regulated by set screws acting on the moveable bearings; and in order to regulate the slide or feed regulator a lever carried by a pin is used on the side of the hopper; one end of the lever has a curved slot or groove into which a pin on the slide which regulates the supply from the hopper to the roller enters, and by moving the other end of the lever to and fro the aperture may be increased or diminished with great nicety."

[Printed, 4d. No Drawings.]

A.D. 1853, July 26.—No. 1758.

BUXTON, THOMAS.—The object of this invention is to improve the construction of mills adapted to grind grain, seed, coffee, spice and other substances. It is described by the inventor as follows:—

"The grinding surfaces may be formed in iron, brass, or stone, or one of these surfaces may be formed in any one of these materials, and the other surface in any other of these materials, according to the use to which the mill is intended to be applied. The running stone or grinding surface is in the shape of the frustum of a cone, while the stationary surface is of a corresponding cone shape. These conical surfaces are placed vertically, the running or grinding surface being mounted on a horizontal axis or shaft, and being made capable of adjustment with respect to the stationary surface in order to vary the distance between them, as may be required. The corn or other substance to be ground is fed through an aperture in the stationary stone or grinding surface, while the flour or pulverized material makes its exit through

“ apertures in the running grinding surface, as well as from  
 “ the circumference of the base of the cones. In addition to  
 “ the teeth on the two surfaces, I find it necessary to cut a  
 “ spiral groove or channel in the working surfaces, or in the  
 “ running surface only, in order to ensure the ground stuff  
 “ leaving the mill without being subjected to any unnecessary  
 “ retrituration, and also to distribute the grain or substances  
 “ to be ground well over and between the grinding surfaces.  
 “ In some cases I intend forming the upper part of the cone  
 “ in stone, and the lower part in metal. The mill is driven  
 “ by hand, or by steam, water, or horse power applied to the  
 “ axis or shaft of the running stone or grinding surface. In  
 “ addition to the purposes of grinding or reducing materials  
 “ to flour, my improved mill may also be used for breaking,  
 “ bruising, or crushing beans, peas, and seeds, ginger, sugar  
 “ for confectioners, charcoal, and other substances.”

[Printed, 1s. Drawings.]

A.D. 1853, August 6.—No. 1837.

JUST, MARTIN ZADICK.—(*A communication.*)—(*Provisional protection only.*)—This invention of machinery contrived for hulling and dressing rice or paddy is briefly stated to “ consist in  
 “ causing the paddy or rice to pass between two rollers placed  
 “ horizontally or nearly so; these rollers are covered with  
 “ very thick leather, known in commerce as sea horse hide,  
 “ or other suitable material, and the circumferences of the  
 “ rollers revolve at different velocities; by this means the  
 “ paddy or rice is hulled and dressed in passing between the  
 “ said rollers, beneath which is placed a fan for causing a  
 “ current of air to separate the husks from the rice. It is  
 “ desirable to have elastic packings behind the bearings of one  
 “ of the rollers, so that the roller may yield in case the paddy  
 “ or rice is fed in in too large quantities.”

[Printed, 4d. No Drawings.]

A.D. 1853, August 16.—No. 1915.

MARTIN, JOSEPH.—(*Provisional protection only.*)—This invention, relating to the method of constructing and working mills designed for grinding corn and other grain, consists in :

1st. Driving the under stone, and causing the upper stone to remain stationary, in contradistinction to the usual practise

of fixing the under stone, and causing the upper stone (which is commonly called the runner) to revolve.

2nd. The application of a spring in place of a key for the purpose of securing the wheel to the axis or shaft which gives rotary motion to the stone.

[Printed, 4d. No Drawings.]

A.D. 1853, August 30.—No. 2013.

NEWTON, WILLIAM EDWARD.—(*A communication.*)—This invention of machinery or apparatus contrived for the process of cleaning bran and the offal obtained during the manufacture of flour relates to:—

1st, “The employment of an additional scourer, through which the finer grades of offal are passed after their separation from the coarser, in order that they may be subjected to the requisite degree of friction for producing the desired effect, without involving the necessity of the coarse offal undergoing the same process, and consequently becoming injured by cutting. The first scourer through which the bran or offal is made to pass is constructed in a conical form, with a roughened metallic inner surface, and in this chamber is a double disc rubber, which rubs the bran or offal against the inner roughened surface of the conical chamber.”

2nd. “The arrangement of the bolting cloths in a vertical position so as to be capable of a vertical vibratory motion for preventing the clogging of the cloth. For this purpose the bolting cloths are mounted on a separate frame, which rests on springs, and is agitated by being struck with hammers, or in any other convenient manner.”

3rd. Such an arrangement and construction of the several parts as to cause a current of air to pass through the bolting cloths in order to throw the flour and bran against them, and effect the separation in a superior manner.”

[Printed, 6d. Drawing.]

A.D. 1853, September 12.—No. 2106.

TURNER, EDWARD RUSH.—(*Provisional protection only.*)—This invention, relating to the constructional arrangements and details of mills adapted to the grinding of grain refers to the special construction of the grinding surfaces, and to the means

employed for feeding to such surfaces the substances required to be ground. It as (stated by the inventor) "consists in the employment of flat or conical plates of white cast iron or other hard metallic substance. These plates are of a disc form, the face surfaces of each being either flat or otherwise as required. They are contained in a cylindrical box supported by a frame, in which a vertical spindle passes and carries the lower plate, this spindle being actuated by suitable gearing. The lid of the box carries a hopper for the reception of the substance or material to be ground, and a feed roller and slide are fitted to the bottom of the hopper to regulate the supply. The teeth or grinding portions of the plates are cast on them, and radiate tangentially from a small circle in the centre of the plate to the periphery. The upper grinding plate is fixed to the lid of the cylindrical box by screwed studs, which allow also for adjusting the height of the plate which rests at these studs upon vulcanized india-rubber or other elastic washers. Similar washers are also placed on the face side of the grinding plate between the plate and the stud rest. The centre of the plate rests by a spherical convex ring on a corresponding concave ring in the box lid, forming thereby a ball and socket joint; thus the plate is made self-adjusting to any irregularity of pressure beneath it. The lower and revolving plate has cast within it a wrought-iron eye, which rests upon a shoulder on the vertical spindle to which it is secured. The adjusting of the plates nearer or farther from each other is effected by a sliding beam, which carries the upright spindle, and is actuated by a screw and wedge. The above arrangement or construction of plates may be employed also in a vertical mill as well as a horizontal one."

[Printed, 4d. No Drawings.]

A.D. 1853, September 14.—No. 2135.

POOLE, MOSES.—(*A communication.*)—This invention, relating to a machine or apparatus designed for the purpose of separating flour, shorts, and dustings from bran which has passed the bolting or dressing apparatus, consists of three cylinders concentrically disposed respectively, the outer cylinders being fixed and the intermediate or bolting and sifting cylinder capable of revolving at a high speed in the opposite direction



to that in which the smallest or central cylinder rapidly turns. To this latter cylinder is applied what is termed a "ventilator," whereby a current of air is caused to pass into the central cylinder, and through its perforated shell or covering into the annular space formed between it and the intermediate cylinder, which is covered in sections with wire gauze of different degrees of fineness, a portion or section at its upper end being inclosed with the finest gauze, the mid-portion or section of the cylinder with the medium quality of gauze, and the lower end or section with the coarsest, and in the annular space outside this cylinder are fitted bevelled shelves or rings that are so fixed to the inside of the stationary or outer cylinder as to separate the several sections, and a sweeper fixed projecting from the lowest end of each section of the wire gauze as the cylinder rotates scrapes round the shelving rings, and sweeps the separated produce into troughs or spouts, the finest flour passing off through the finest gauze, the seconds flour through the medium quality of gauze, which covers the mid-section of the cylinder, and the shorts and dustings through the coarsest gauze, whilst the bran falls out at the bottom of the annular space, which has openings for the purpose. Whilst the machine is operating a strong current of air is blown into and forced out through the perforated covering of the inner cylinder amongst the bran. Heavy particles of foreign matter are separated from the bran by an air blast as it is fed in regulated quantity into the annular space which surrounds the inner cylinder, and the air blasts or currents are so managed that the upper blast will feed the bran into the machine, and draw the flour through the sieve, whilst the lower current only counteracts the downward pressure of the upper blast so as to prevent any flour being discharged with the bran.

[Printed, 10*d*. Drawings.]

A.D. 1853, October 22.—No. 2447.

JOHNSON, JOHN HENRY.—(*A communication from Messieurs Fromont and Son.*)—This invention, relating to mills for grinding, refers to the method contrived for driving the mill-stones by friction, to the general arrangements of the operating and auxiliary parts, to a mode of lubricating the bearings, and to a circumposed arrangement of six pairs of grinding stones,



driven simultaneously by one large central horizontal friction wheel which is mounted on a vertical axis. The main features of the invention are described as follows:—"The shaft which gives motion to the stone is driven by an intermediate shaft fitted with a friction pulley and driven by contact only. This shaft communicates its movement to the main shaft by a pinion and spur wheel, the latter being keyed on to the main shaft. This shaft is made hollow, and fitted with a funnel or expanded mouth-piece at its upper extremity to receive the grain which falls on to a slightly dished plate fixed within the funnel mouth a short distance below the mouth of the feed pipe. By raising or lowering this pipe the feed is regulated accordingly. The friction pulleys are pressed against the driving disc by pressing springs, the contact being thus constantly kept up. By withdrawing this pulley from the periphery of the main driving disc the motion of the stone is stopped. The stones are supported by a species of collar, being independent of the working stone. The grain is directed towards the periphery of the stones, the stones being driven either from above or below by a very slight modification."

[Printed, 8d. No Drawings.]

A.D. 1853, November 5.—No. 2569.

SMITH, JOHN.—This invention relates to a method of introducing air between the grinding surfaces of mill stones when in operation, and to this end a circumscribed series of slotted openings, which may be either rectilinear or curved, is formed round the eye of the running stone. These openings are cut through the stone, each extending in a tangent line from the wall of the eye to about two thirds of the remaining length of radius. These slotted openings may be formed in radial lines, or grooves, and channels may be cut into the grinding surface of the stone to form air channels, whereby the corn, seeds, or substances under the operation of being ground, may be kept cool, and the grinding facilitated. A raised rim is applied to the back of the running stone, for the purpose of preventing the passage of air into the case which circumvests both of the grinding stones.

[Printed, 6d. Drawing.]

A.D. 1853, December 8.—No. 2851.

ROBINSON, JOSEPH.—The object of this invention, relating to the construction of mills designed for the process of grinding corn and other substances, is by a certain arrangement of the operating, auxiliary, and stationary parts, to obtain a more beneficial and convenient working. It consists in “constructing  
“separate chambers for each pair of stones, and of mounting  
“each pair of stones within their enclosed chamber on a hollow  
“pedestal or support fixed to the foundation. . . . Such  
“pedestal or support should be of cast-iron and three sided,  
“having at the upper part a bed plate or tray to receive the  
“bed stone, but the form and material of the support may be  
“varied. There is an opening into the hollow support or  
“pedestal to get at the shaft and gearing which is within it.  
“Around the pedestal or support the closed chamber is constructed, which it is preferred should be square, and rise from  
“the foundation to some inches above the upper stone. The  
“chamber is covered in at top, excepting at an opening to  
“admit the corn or substance to be ground passing to the eye  
“of the upper stone. The chamber is a few inches larger than  
“the diameter of the stones. The meal or other ground substance passes freely out at all parts of the periphery of the  
“stones into the enclosed chamber, in which there are inclines  
“down which it flows to the bottom, where a screw conveys it  
“away. When several pairs of stones are used in a mill, the  
“supports or pedestals may be all fixed together, but the floors  
“and other parts of the building of the mill are independent  
“of the mill stones and of the pedestals or supports, and also  
“of the enclosed chambers, and in order to support the floor  
“of a mill, it is preferred to employ hollow beams opening  
“into the enclosed chambers, so as to allow of air being withdrawn from such chambers, or the air may be withdrawn  
“therefrom through suitable pipes or passages. In order to  
“get at the mill stones, the upper part of each chamber above  
“the floor is made to admit of parts being conveniently taken  
“down; and in order to get into the hollow supports or  
“pedestals, a passage is made through one side of the enclosed  
“chamber in such manner that the space wherein the meal or  
“ground matter is received is closed so as to prevent the  
“products getting to the interior of the hollow pedestal or  
“support.”

[Printed, 8d. Drawing.]

A.D. 1853, December 13.—No. 2891.

PLUMMER, WILLIAM FREDERICK.—This invention, relating to a machine designed for the process of grinding or crushing vegetable and other substances, consists in the employment of three rollers, which are mounted horizontally in suitable side frames of cast iron, wherein the bearings which support the axes of the rollers are adjustably disposed, two of the rollers being placed one directly over the other on the same vertical plane, and the third roller above, but not in the same vertical plane, it lies back upon the upper roller, their axes relatively being placed at an angle of about  $45^{\circ}$ . The surface speed of each roller is caused to differ from the others by means of tooth gearing on their respective axes, the axis of the lower roller carrying in addition a fly wheel at one end, and a pair of driving pulleys at the other. A hopper is placed above the rollers to receive the substance requiring to be ground or crushed, and after it has passed through the upper and middle rollers, it clings to the latter and is carried down to between the middle roller and the bottom roller, from the surface of which it is removed by a scraper into a trough, and thence it falls into a receptacle beneath. Setting down screws regulate the distance apart of the rollers, and consequently the degree of grinding, but springs are interposed beneath the pressure of the screws, in order that the pressure may yield should any hard substance pass betwixt the rolls.

[Printed, 6d. Drawing.]

A.D. 1853, December 19.—No. 2950.

CROSSBY, WILLIAM.—(*Provisional protection only.*)—This invention relates to the ventilation of granaries and other places employed for storing grain, also to the grinding of other substances, and to the dressing of grist. The ventilation of grain with hot or dry air is accomplished by the application of a fan, and the air is distributed by perforated pipes or tubes, arranged in a manner most suited to the construction, formation, or dimensions of the granary or place of deposit, thereby (it is stated) conducing greatly to the preservation of the grain, and to its preparation for grinding. Also by means of a fan and pipes, the heated air is exhausted from grinding and dressing machinery, and cold fresh air is constantly supplied. By this mode of working (it is said) the gluten will be re-

tained, and those parts of the machinery usually left exposed may be inclosed, so that a considerable saving in dust may be effected.

[Printed, 4*l*. No Drawings.]

A.D. 1853, December 24.—No. 2992.

BUCHHOLZ, GUSTAV ADOLPH.—This invention relates to what is stated to be “a novel construction of machinery for removing  
“ from rice, wheat, and other seeds the husk or outer coating  
“ thereof. To effect this I mount on a vertical axle (which is  
“ capable of rotating in its bearings), a conical stone or rubbing surface provided with a thread or worm on its periphery,  
“ and this stone or other rubbing surface I surround with a  
“ stone or other suitable casing, of such dimensions and shape  
“ as will form a gradually contracting space between the two  
“ friction surfaces, for the reception of the seed or grain.”

“ The grain is fed from a hopper into the space between these  
“ surfaces, and it is there subjected to a considerable friction,  
“ which will remove the husk or outer coating from the grain.  
“ To increase this friction, and to keep the rubbing or grinding surfaces clean and sharp, I propose to introduce into the  
“ machine with the grain small stones or pebbles about the  
“ size of pigeon’s eggs, which by their weight will carry down  
“ the grain, and expedite the operation of the machine.”

The principal advantages derivable from the use of the invention are stated as follows :—

“ First, that no nutritious portion of the grain is removed  
“ with the husk or covering. Second, that after undergoing  
“ the cleaning and hulling operation, the grinding of the  
“ wheat or other grain is more easily effected. Third, that  
“ the yield of first flour from any given quantity of grain is  
“ largely increased. Fourth, that the quality, appearance,  
“ and nutritiousness of the flour are improved. Fifth, that in  
“ cleaning, dressing, and hulling rice a greater weight of rice  
“ is obtained from the paddy, with very few or no broken  
“ grains. Sixth, that the natural flavour of the grain cleaned  
“ and hulled in the machine, and of the meal and flour from  
“ it, are preserved, so that the flavour is much superior to  
“ that cleaned and hulled by the machinery or process in  
“ common use.”

[Printed, 8*d*. Drawing.]

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1854.

A.D. 1854, January 19.—No. 127.

SPILLER, JOEL.—This is an invention of various apparatus, designed for measuring grain, crushing or bruising wheat or other grain, cutting or forming the grinding surfaces of mill-stones, and employing marble or glass as a substitute to be used instead of ordinary mill-stones for “double grinding” or reducing middlings to flour; it consists in:—

1st. The measuring apparatus, which is intended for use where a given quantity of each of several kinds of grain are required to be mixed together previous to grinding, the quality of the flour made therefrom being (it is stated) better and more uniform. The meter comprises a fixed external cylindrical case, concentrically through which is passed a revolving axis, that is furnished with a number of radiating blades or projecting feathers, just small enough in length and breadth respectively to move round clear of the internal circumference and ends of the cylinder. These blades are equidistant, and they divide the capacity or internal space of the cylinder into a number of segmental chambers, severally capable of holding the same quantity of grain, which descends a spout and enters the cylinder at the top, filling the chambers in succession, and is carried round half a revolution to beneath the axis, where there is a delivery aperture. The cylinder is caused to revolve at the desired speed by means of a pair of conical drums, and the number of revolutions is registered by an index. A different measuring cylinder is required for each quality of grain, but all of them discharge into one common receiver or bin.

2nd. The crushing apparatus comprises a small cylinder or roller, which has a fluted or grinding surface, and is placed to revolve concentrically within a cylindrical case, wherein at opposite points are fitted two flat grinding surfaces, capable of adjustment as regards distance from the roller. The intermediate spaces round the roller between the surfaces, communicate respectively with the supply hopper and the delivery. The feed is regulated, and the apparatus may be fixed over a grinding mill.



3rd. The dressing or furrowing of mill-stones. On the grinding surface of the running stone, one edge of every furrow is cut on a straight line radiating from the center of the stone and the other edge is parallel therewith, and on the bed stone the lines of the furrows are cut to form radiating curves.

4th. Employing marble and sometimes glass surfaces for grinding "middlings," the running grinding surface having 40 straight radiating furrows, and the bed stone 20 furrows which are curved.

[Printed, 10d. Drawing.]

A.D. 1854, January 30.—No. 229.

CHAPMAN, ROBERT.—This invention relates to a self-acting apparatus, designed for regulating the feed to grinding mills, and constructed to act on the same principle with gyrating centrifugal action balls, as the ordinary governor of a steam engine. The inventor says:—"I connect to the running mill-stone a vertical tubular shaft which partakes of the motion of that stone. This shaft passes upwards through the supply hopper, and serves as a guide for the valve plate or feeder to move up and down on. The valve plate is moved up and down by means of a rod or spindle within the tubular shaft, which is connected at its lower end to the valve plate, and at its upper end to the arms of the governor balls, by a suitable arrangement of links. The tubular shaft is slotted or otherwise formed, so as to admit of the rod or spindle within it being connected to the sliding valve plate or feeder. It will be readily seen that according as the running stone is driven at a greater or less velocity, so the valve plate or feeder will receive motion up or down by means of its connection with the centrifugal balls, and the supply to the millstones will be regulated accordingly. I do not confine myself to this precise arrangement, as the working parts might be so disposed as to allow of the valve plate being attached to a tube sliding outside the shaft connected to the running stone, instead of to a rod or spindle moving within that shaft."

[Printed, 6d. Drawing.]

A.D. 1854, February 28.—No. 477.

PALLEGOUX, LEONTIDE AGLAËE, and BELLANGE, ALEXANDRE LOUIS.—This invention relates to a mode of treating grain, which it is stated will afterwards yield more flour than grain ground in its natural state.

The process consists in first dessicating or drying the grain in chambers heated to about 95° Fahr. The grain must be spread out in a layer of from 2 to 3 inches deep or more, and during the drying process turned over from time to time. By this means the natural moisture of the grain is evaporated, and contraction and consequent loosening of the cortical or external covering of the grain takes place, so that it more easily separates from the interior or farinaceous part, in which (it is stated) the process seems to cause, "a certain molecular change."

According to the second part of the process the dried grain is then uniformly damped with water or other suitable liquid, so as to return to it the same amount or even more moisture than it parted with during the drying process, care being taken so to distribute the water, that each grain receives its due share, which is to be effected by continually turning and stirring it about. The re-moistening of the grain may be done by steam. When this part of the process is completed, the grain is said to be in a fit state for grinding.

[Printed, 4d. No Drawings.]

A.D. 1854, February 28.—No. 482.

REHÈ, JOHN HENRY.—This invention relates to the construction of a machine or apparatus intended to effect the various operations of mixing, washing, crushing, and reducing substances. This apparatus consists as described by the inventor, "of a cylinder made of metal or of wood lined with sheet metal, or other suitable material, the interior of which is formed into a series of angular projections. The beaters are rectangular or other shaped pieces of metal, stone, stoneware, or other suitable material, secured to arms which are fixed to a central rotating shaft. The arms to which the beaters are attached are thin pieces of metal or other material, forming springs, in order to give the beaters sufficient elasticity to pass freely over the inclined planes

“ formed by the angular projections upon the inner side of the cylinder. When the shaft to which the beaters are fixed is put in motion, the beaters pass rapidly over the apices of the inclined planes, and strike against the angle of the succeeding incline ; the substances placed within the cylinder to be reduced are crushed by the blows of the beaters against the inclines, while the agitation produced by the revolution of the beaters effects the operations of mixing and washing.”

Two modifications of the apparatus are shown and described ; in one of these the beaters are attached to a series of curved arms or springs horizontally radiating from a central axis, and in the other the springs (which hang downwards and are bent outwards) are fixed at their upper ends longitudinally to the upper part of the axis.

[Printed, *sd.* Drawing.]

A.D. 1854, March 2.—No. 512.

CURRIE, JOHN.—(*Provisional protection only.*)—This invention relates to the process of washing and cleaning Egyptian and other wheat and grain ; to arrangements for the introduction of air to the grinding surfaces of mill-stones whilst in operation ; and also to flour dressing machines.

The grain requiring to be washed is passed from a screen or riddle into the end of a narrow water trough, where it is agitated and stirred about in the water by a series of inclining blades or paddles, which gradually work it to the opposite or delivery end of the trough, whence it is lifted out by perforated draining buckets carried by an endless chain, or by other means, the clean water supply being introduced in a constant stream at the delivery end. The grain which is delivered by the buckets into a wire gauze drainer, is afterwards dried in the usual way.

To effect the entrance of air between the grinding surfaces of mill-stones, the running stone is covered with a case, an adjustable opening being provided for the admission of air to the eye of the stone, which may be either forced in or inducted by exhaustion.

In flour dressing machines, arrangements are made for the introduction of air at the longitudinal center, for which purpose a portion of the dressing cylinder is cut away at the

center, and a fixed casing is introduced. The air may be forced in by a blowing machine, and the brushes may be driven at an accelerated speed.

[Printed, 4d. No Drawings.]

A.D. 1854, March 3.—No. 517.

BOYLE, JOHN AUGUSTIN.—(*Provisional protection only.*)—This invention of apparatus for “crushing or reducing to powder, pulp, or wash any matter,” is described as follows:—

“A machine set in a strong framework of wood, iron, stone, or brickwork, being a basin of perfect concavity of any diameter (eight feet are dimensions laid down as being most useful for division into large or small machines proportionately). In this basin a shaft is fixed to which the working gear is attached, and which shaft and gear turns round a corrugated or serrated iron, wood, or stone conical weight, solid or hollow, perpendicularly placed in the basin at the bottom, which iron, wood, or stone conical weight gives revolution to one or more conical weights or mill crushers of the same shape as ” the frustum of a cone “the weight of which or their pressures shall pulverise, wash, or amalgamate or mix any substances, whether mineral, vegetable or animal, or other substances.”

[Printed, 8d. Drawing.]

A.D. 1854, March 29.—No. 721.

JOHNSON, JOHN HENRY.—(*A communication from Henri Fortuné Negrier.*)—This invention relating to apparatus designed for the purpose of driving the millstones of grinding mills by horse power, and to a particular mode of connecting the running stone with the driving shaft of mills, whereby (it is stated) a more equable motion is obtained, consists in:—

1st. “The employment of a vertical shaft rotated by horse power in the ordinary manner. On the upper end of this shaft is keyed a spur wheel, which gears into two pinions situated at diametrically opposite points of its circumference; these pinions have keyed on to them two vertical shafts, each shaft carrying at its upper extremity a larger pinion or wheel which gears into a spur wheel the same size at diametrically opposite points in its circumference; the

“ shaft of this wheel carries also another spur wheel of larger diameter, which gears into and gives motion to a large spur wheel keyed on to a vertical shaft, which carries also another spur wheel of still larger diameter; this latter wheel gears into a smaller cog wheel fast on the driving shaft of the mill or other mechanism to be actuated.”

2nd. “ Attaching or connecting the last-mentioned shaft to the upper mill stone, by a species of fork, which is so arranged that the stone shall not be entirely fixed to the shaft, thereby obviating any bad results that may arise from irregularity of movement, or a sudden stopping of the horse which drives the mill. The lower portion of the driving shaft rests in a footstep bearing, capable of adjustment by means of a screw or other mechanical arrangement. From the above arrangement it will be seen that the running stone is driven from above instead of from below.”

[Printed, 8d. Drawing.]

A.D. 1854, April 28.—No. 962.

GIBSON, ANDREW WHITE.—This invention relating to the constructional details of “ mills for the manufacture of barley and rice,” refers to the means employed for feeding the material, and also for removing or discharging it after the operation mechanically instead of by hand gear, so that the mill proceeds uninterruptedly without requiring on the part of the attendant at stated intervals, any assistance in the operation; the material is also freed from dust.

The feeding of the mill is effected by the periodical withdrawal of a cylindrical slide, which allows a regulated quantity to pass down to the grinding surfaces, and the requisite movement is imparted to the slide by the mechanism. The same result may also be obtained by the use of two flat slides, made to self-act at the proper intervals.

The discharging apparatus operates upon a door with a spring lock, which is periodically opened by the action of the machine, and the discharge then takes place from the lower part of the case which incloses the stones.

The dust is separated from the materials by fans, whereby it is blown along a spout into an outer room or space.

After the material is freed from the dust, it falls into a small hopper beneath the case. The lower part of this hopper is fur-



nished with a balance valve, kept closed by a weighted lever until the latter yields to the accumulating weight of the material on the valve, which then opens and the material falls down a spout into bags or other receptacles.

[Printed, 10*d.* Drawings.]

A.D. 1854, May 3.—No. 994.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(*A communication.*)—(*Provisional protection only.*)—This invention relates to the construction of a grinding mill or apparatus which (as stated) is “erected on a suitable frame. On the upper part of this “frame stands a hopper, whose feed is regulated by a cylinder “driven from a horizontal shaft by means of a handle or “pulley; on the cross beam are fixed the step of the mill “spindle and a double conical shell. In the upper shell, “which is grooved inside, moves a cone, which being more “obtuse than the outer cone, the space between the two cones “lessens downwards, so as to grind finer and finer. The “lower cross rail is moveable by means of set bolts, and the “distance between the grinding cone and its shell is thus “regulated.”

“The flour ground by the action of the grooved cones falls “by the lower cone into the bolting mill.”

“The mill spindle is driven from the horizontal shaft by “means of bevil gear.

“The driving may be either by hand or by power.”

[Printed, 4*d.* No Drawings.]

A.D. 1854, May 12.—No. 1066.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(*A communication.*)—The object of this invention relating to a mode of treating flour, meal, grain and other substances, is to retard the process of decay, which (it is stated) where there is only a small amount of moisture, invariably commences at the center of the heap or mass, and thence extends in all directions. To this end the center of the mass is removed “by placing therein “an open tube or tubes, or by the employment of any substantially similar means, by which the mass is so distributed “that if decay commences at any point it must extend to a “very great distance in order to effect any considerable por-

“ tion of the mass, and therefore its progress must be very slow.  
 “ By thus removing the centre, the mass is also distributed in  
 “ a body of less than one-half the thickness it would otherwise  
 “ be, and thus it is believed the tendency to decay is in a  
 “ great degree prevented.”

[Printed, 6d. Drawing.]

A.D. 1854, May 19.—No. 1122.

RANDS, CHRISTOPHER.—(*Provisional protection only.*)— This invention relates to a mode of feeding grain to the stones of grinding mills in such a manner, that the supply is regulated in accordance with the speed of the mill, and to effect this the grain or other substance as it falls is transferred from the  
 “ hopper by means of a rotating screw to the shute, which  
 “ guides it to the eye of the runner or upper stone; and  
 “ this screw I drive by a friction wheel on the screw shaft  
 “ running in contact with the face of a disc keyed to the spindle  
 “ of the runner.”

“ The friction wheel is adjustable on its shaft, and may be  
 “ set by means of a forked lever to any required position  
 “ nearer to or farther from the centre of motion of the driving  
 “ disc, according to the mean speed desired to be imparted  
 “ to the screw. Or, instead of using this adjustable friction  
 “ wheel, I drive the shaft by common gearing, and effect  
 “ the adjustment by changing the pitch of the screw. This  
 “ may be readily effected by forming the helix of the screw  
 “ of plate metal, and affixing one end thereof firmly to the  
 “ shaft, and the other to a nut, which is capable of sliding on  
 “ the shaft. To this nut a forked lever is attached, by operating  
 “ which the helix of the screw may be compressed or elongated, and thus the required mean rate of feed will be  
 “ attained, while at the same time the variable speed of  
 “ the runner will be transmitted to the screw, as in the first  
 “ described arrangement.”

[Printed, 4d. No Drawings.]

A.D. 1854, May 30.—No. 1201.

LOYSEL, EDWARD.— This invention relates to the construction of a duplex hand mill combined with a weighing apparatus, and adapted to the grinding or pulverizing of vegetable substances. It also relates to preparing infusions

or liquid extract of tea, which after the grinding or pulverizing process, is stated to yield a stronger infusion when treated with boiling water, than can be obtained from the unground leaves.

The grinding mill is duplex, comprising two vertical mills placed side by side in one casting or case, each section having fixed above it a vase or other appropriately shaped chamber, communicating through an opening in the bottom of each respectively, with the two mills. The spindle of each mill passes up through the vase above, wherein the material to be ground (say coffee in one and tea in the other) is placed, and a portion of the upper end of each spindle is made rectangular to receive a handle, which is moved round by hand horizontally. The revolving grinders are coniform; they are fixed on the lower ends of the spindles, and work in barrels of corresponding form, their contiguous grinding surfaces being edge-grooved or serrated in the usual way. The material when ground falls from the grinders into a receiver that is supported by a spiral spring, which yields with increase of weight, the amount whereof in accordance with the depression is exhibited by an index. This weighing apparatus is adapted by shifting it, to both mills.

A single mill of a different form, but similar in other respects is also described.

[Printed, 1s. Drawings.]

A.D. 1854, June 1.—No. 1216.

WESTRUP, WALTER.—This invention relates to the treatment of grain preparatory to its being ground into flour, and to the apparatus employed.

The object is to obtain the kernel of the grain broken into pieces and separated from the shell previous to grinding, by which means (it is stated) a very superior flour is afterwards obtained. To effect this result, the ends of the grain are first broken or cut off by a pair of mill-stones, the grinding surfaces whereof are set apart for what is termed "rough grindings," but not near enough to crush or pulverize the kernel of the grain. The grain is then broken as nearly as possible into quarters, and the flour unavoidably produced is separated; the larger particles are then passed

over a screen or a sieve and separated by an air blast or current into three parcels, the coarsest being the bran and portions of the kernel which adhere to it, and are separated by regrinding. The other two portions consists of particles of the kernel called "grit," one portion being in finer particles than the other; the regrinding, separating, and cleansing, is repeated until the residue is no longer separable, and nothing but pure white particles of the kernel is left to be ground into flour in the usual way.

The apparatus employed is fed from a hopper, and as the broken grain descends, it is according to the specific gravity of the different particles correspondingly blown by the air blasts more or less out of the direct line of descent, and falls into different receptacles or divisions of the apparatus, and thence it falls into others, and is still further separated by the force of other blasts or currents of air. The machine described is what is termed "four fold," having four distinct feeds of grit, and eight of air.

[Printed, 10*d*. Drawing.]

A.D. 1854, June 9.—No. 1277.

CURRIE, JOHN, and YOUNG, ROBERT.—This invention relates to the construction of apparatus designed for washing, cleaning, and drying Egyptian wheat; to mill-stones, and grinding mills; and to flour dressing apparatus.

The washing and cleansing of Egyptian wheat is performed in a long trough, which is furnished with a semi-cylindrical perforated false bottom. The wheat is delivered from a screen or riddle into one end of the trough, through which from the opposite end there is a constant flow of water, wherein the wheat is agitated by blades or paddles obliquely fixed on a revolving shaft, disposed lengthwise above. The paddles dip into the trough every rotation of the shaft, and whilst stirring about the grain, they gradually work it to the opposite end of the trough, whence it is lifted out by an endless chain of perforated buckets, and deposited in a draining duct, arrangements being made for the convenient removal of the stones and foreign matter which has been separated from the wheat or washed off. Modifications of these arrangements are *described*.

The drying process is effected by a modification of the well-known hydro-extractor or revolving drum, wherein is fitted to revolve at a slightly different speed to the drum, a spiral vane, which gradually moves the grain from the end of the drum where it is constantly entering, to the other end whence it is continuously delivered.

The invention as regards the grinding mills relates to arrangements by means of a fan, for drawing air through a number of passages formed through the upper stone, whether it be the runner or not.

Duplex grinding mills, or one pair of small circular stones revolving within a pair of annular stones, are also employed. The bottom stones are carried by the same shaft or mill spindle, and revolve together. The small stones crush or rough grind the grain, and deliver into an annular space between the pairs of stones, upon a perforated screen; the centrifugal force with which the rough ground grain is thrown off, causes it to enter between the annular stones, whilst that portion which is sufficiently ground, falls through the screen. These arrangements may be modified.

In machines for dressing flour, arrangements are made for admitting air at the mid-length of the dressing cylinder, and if necessary at other places in its length, but not at the ends.

[Printed, 1s. 6d. Drawings.]

A.D. 1854, July 6.—No. 1479.

HARVARD, SAMUEL, and WOMERSLEY, JOSHUA. — This invention relates to the construction of apparatus for crushing seed, drying seeds corn and other grain, and for feeding grinding mills. Three modified arrangements of the invention are described. The first consists of an apparatus for drying crushed and other seed and grain, and comprises an outer fixed cylinder supported on framework with one end raised from a horizontal position, and having an internal tube or cylinder concentrically fixed within it, so as to form an annular space between them, which space is to be filled with steam or heated air. A shaft or axis caused to revolve by any suitable means, is disposed along the center of the inner cylinder, and is furnished throughout its length with a series of vanes fixed obliquely to the shaft and projecting radially,



so that when the shaft rotates, the grain which is fed from a hopper into the upper or raised end of the inner cylinder, is gradually moved to the other or lower end, where it is discharged, and may be arranged (by the position of the apparatus) to fall either into bags, or into the hopper of a grinding mill in which case (as shown) the shaft is dispensed with and the steam is admitted to the inner cylinder, whilst the outer cylinder is caused to rotate and carry internally the oblique vanes.

[Printed, 10*d*. Drawing.]

A.D. 1854, July 8.—No. 1503.

TINDALL, LORENZO.—The object and adaptation of this invention relating to the construction of machinery contrived for bruising or reducing grain and other substances is “the production of a cheap and simple machine, possessing at the same time a peculiarly efficient bruising or crushing action, with superior ease in working. The machine under one convenient form consists of an open rectangular frame, supporting a horizontal bruising cylinder or roller, which revolves in close contact with a stationary grain feeding and bruising bar. The periphery of the crushing cylinder is formed with angular ribs, set ratchet-wise and parallel to the cylinder’s axis. These ribs carry down the grain from above to the bruising bar, which is formed with a smooth face at its upper part, having an inclined curve towards the cylinder, whilst at the bottom is a serrated plate, or a row of teeth projecting beyond the inclined face, and reaching close up to the cylinder. The grain to be bruised is fed into the machine by an over-head hopper or pyramidal receiver, and as the cylinder revolves its ribbed surface seizes and carries down the grain, bruising it against the bar’s edge.”

[Printed, 10*d*. Drawing.]

A.D. 1854, August 16.—No. 1792.

WALLWORTH, THOMAS.—This invention relates to a process of treating and purifying grain, to dressing flour, and to the machinery employed. It consists in:—

1st. Taking the grain to be operated upon in a dry state, and while passing it through an inclined cylinder of wire work

or perforated plate it is acted upon by straight-edges or blades fixed obliquely on an axis which rapidly revolves. The friction and attrition of the grains against each other loosens the dirt and impurities, which are sifted through the cylinder, whilst the chaff and other light particles are carried off by a blowing apparatus, through which the grain passes as it falls into a sack or receptacle below, or if it requires moistening to prepare it for the drying operation, it is passed through another cylinder, and acted upon by fine jets of water.

2nd. For dressing flour the machine described above is employed. The speed of the revolving axis which carries the blades is accelerated to about 550 revolutions per minute, at which speed the centrifugal action of the blades upon the atmosphere, produces a current of air sufficiently strong to drive the flour through the wire gauze covering of the cylinder, which is in sections of different degrees of fineness for the purpose of separating the ground material.

[Printed, 10d. Drawing.]

A.D. 1854, August 25.—No. 1863.

MARTIN, JOSEPH.—(*Provisional protection not allowed.*)—According to this invention the power required to drive the mill-stones of grinding machinery is to be applied to the shaft or spindle of a mill direct from the piston rod of a steam engine. The invention, which is also applicable to machines employed in cleaning wheat, rice, and other substances, “consists in dispensing with the ordinary shafts and gearing now in use, and instead thereof applying direct action to the stone shafts or spindles, by connecting them at once with the piston rod of a steam cylinder.”

[Printed, 4d. No Drawings.]

A.D. 1854, October 14.—No. 2195.

HARRISON, JOHN.—This invention relates to a method of so connecting the centers or bosses of mill-stones to the driving spindle that the connection shall have liberty to yield in case of any sudden shock or impediment, and this is effected by introducing a self-adjusting arrangement of spiral or other suitable form of steel springs. The inventor says:—“The boss is bored at each lug to admit a hoop or series of hoops, and

“ is open at one end to receive a spring or springs of sufficient strength; and the boss is closed at the end adjoining the driving bar, so as to preserve the spring end from damage, the spring being made to fit tight without play in the hoop. The hoops are turned to fit exactly within the opening bored to receive them, allowance being made for them to press in or out, as required. The hoops are made shorter than the springs, so that the hoops are allowed to work inwards when the weight is applied; but the spring end requires to have abutment, consequently the hoop works over that part of the spring which is uncovered when the hoop is pressed inwards. I also use set screws to force the back spring or following springs up to the centre or driving bar, that the springs may act equally on all sides thereof.”

[Printed, &c. Drawing.]

A.D. 1854, November 1.—No. 2319.

TAYLOR, GEORGE.—This invention, relating to mill stones and to the constructional details and arrangements of grinding mills, refers to :—

1st. The bottom mill stone, which by means of a carrier fixed to the mill spindle is caused to revolve. The stone is balanced upon the top of the mill spindle on a steel center that is surrounded by an oil cup, the parts being sheltered from dust by a suitable cover.

2nd. Fixing round the periphery of the bottom or running stone a hoop of iron to prevent the return of the flour to the stones, a case of wood being fixed or caused to revolve slowly under the hoop.

3rd. Employing a slowly revolving creeper with scrapers or brushes, to sweep the flour delivered from the stones into the delivery spouts, the requisite motion of the creeper being obtained, beneath the bottom stone, from the mill spindle.

4th. Relates to contrivances for levelling and adjusting the top stone, which is stationary.

5th. Forming on both faces of one or both of the mill-stones, grinding surfaces to suit different kinds of work, the stones to be turned over as required.

[Printed, &c. Drawing.]

A.D. 1854, November 2.—No. 2326.

**GEDGE, JOHN.**—(*A communication from Auguste and Alphonse St. Denis.*)—(*Provisional protection only.*)—This is an invention of apparatus designed for actuating a grinding mill or machine by a combination of fly-wheels. The axis of the first motion fly-wheel rests on pillar bearings, and is furnished with two crank handles, one at each end for the purpose of working it by manual labour. This wheel is placed in close proximity to the end of a frame, whereon is horizontally mounted in suitable bearings two other shafts or axes, on each of which is fixed a second motion fly-wheel, a band pulley, and a toothed trundle or small wheel. Both these fly-wheels obtain motion from the first by means of two endless bands, which work round the periphery of the first fly-wheel, and thence separating pass one round the band pulley on one of the second motion shafts and the other round the pulley on the other second motion shaft. Both the trundle wheels engage with one spur wheel, on the horizontal axis of which is fixed [the wheel that gives motion to the vertical spindle of the grinding mill.

[Printed, 6d. Drawing.]

A.D. 1854, November 20.—No. 2452.

**KEEFE, RICHARD.**—This invention relates to the construction of a flour-dressing machine, which admits of the employment for sifting the meal, of a finer silk or sieve, to which a vibratory motion is imparted. This machine is described as consisting of “a long wooden shaft, triangular in the cross section, and duly mounted in bearings at each end, from which is suspended a triangular open frame of wood, covered internally with calico at the sides, and with silk of the required fineness at the lower part, thereby forming a sieve open at each end. The long wooden shaft is strengthened by means of longitudinal and transverse arches of iron, suitably united to form a kind of frame, capable of resisting the strain on the said shaft, tending to draw it out of the horizontal line. To each end of the shaft is fixed an upright bar, to the upper end of which is connected a rod, which is again connected to a crank, and these two cranks are on the same shaft, which may be driven in any convenient manner

“ from a first mover, so as to impart a vibrating movement to  
“ the sieve suspended from the long wooden shaft. The  
“ hopper for supplying the meal has at its lower end a spout  
“ passing into the upper end of the sieve. The silk employed  
“ to form the bottom of the sieve must be of the proper  
“ number or degree of fineness, and I prefer that its elastic  
“ strength should be increased by the insertion of a strip of  
“ india-rubber along it. When the silk is cased on this  
“ machine it must be done very tight, else the meal will  
“ slaken it, and thereby render it more or less incapable of  
“ dressing the flour; therefore I join to one side of the silk on  
“ its length a strip of india-rubber about an inch wide, and of  
“ sufficient strength to keep the silk from bagging under the  
“ weight of the meal, and at the same time with a softness of  
“ elasticity that will prevent the silk from being snapped  
“ asunder by the vibrating motion of the machine.”

[Printed, 10d. Drawing.]

A.D. 1854, December 9.—No. 2590.

BUCHHOLZ, GUSTAV ADOLPH.—(*Provisional protection only.*)  
—This invention, relating to machinery applicable to the  
hulling or cleaning of grain, seeds, and vegetable produce, is  
supplementary to former Letters Patent granted to this inventor,  
December 24, 1853, No. 2992; and refers to the runner of the  
mill, which was formerly described as conical, and threaded ex-  
ternally like a screw. It is now found of advantage to make the  
runner “ in other shapes, as concave, convex, or cylindrical, or  
“ even in segments set radially round the driving shaft, a thread  
“ or worm being cut on its periphery as in the former instance.  
“ The lining also of the case which contains the runner I form  
“ of segment pieces, which may take a conical, cylindrical, or  
“ other figure to suit the figure of the runner, and these I  
“ advance towards the runner as they are worn away by the  
“ continued working of the machine. In the hulling or  
“ cleaning of rice and some other seeds, I propose to employ  
“ two machines, one for removing the husk or coating, and  
“ the other for polishing the seed. For the latter purpose I  
“ propose, to use a runner covered with flannel or other soft  
“ friction surface.”

“ Instead of a rotating stone or friction surface provided  
“ with a channel or thread on its periphery. I propose to use



“ as an equivalent therefor a reciprocating friction surface,  
“ similarly provided at its periphery with a channel or thread  
“ which, as it moves in the grain or other substance under  
“ operation, will effect the required disturbance therein for  
“ producing the hulling or cleaning action.”

[Printed, 4d. No Drawings.]

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## 1855.

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A.D. 1855, February 10.—No. 317.

BALK, WILLIAM.—This invention relates to the construction of apparatus designed for crushing grain and other substances, and to several modified arrangements of the machinery, the object being so to arrange and combine crushing rollers with other moving surfaces, that the bearings in which the axes of the crushing rollers work may be relieved from friction, and the crushing be caused by rolling friction without depending on the weight of the crushing rollers when employed as edge stones. To this end revolving discs, plates, or surfaces, are combined with crushing rollers the axis of which run free, the requisite motion being given to the disc plates, or surfaces which operate in conjunction with the crushing rollers at opposite sides of their axes, the rollers respectively rotating in opposite directions, “or, when one surface is stationary, “ by the other pressing surface moving twice the distance to “ that moved through by the central axis of the pressing “ roller.”

[Printed, 8d. Drawing.]

A.D. 1855, February 26.—No. 417.

ANDRÉ, PIERRE.—(*Provisional protection only.*)—This invention relates to the construction of a mill, which (it is stated) works in an inclined position in order to obviate waste of grinding material, and the loss of aromatic and other matter which is vaporised by heat when ground in the ordinary way. It “ consists (as described) in the use of a grinding plate, which “ is combined with a mill-stone on which the grinding action “ is carried on. This grinding plate or disc may be of “ wrought or cast iron, and along its circumference is secured

“ a crown or ledge of mill burr of suitable width, which is dressed as usual for grinding corn or other materials.”

“ This grinding plate, which acts instead of the common runner, has a sufficient weight to grind upon a bed stone, having a flat surface that is placed underneath it.”

“ This bed stone matches the runner in shape, being grooved out, so as to fit, or nearly so, on the crown of burr above mentioned. The surface of the bed stone is equivalent to about one-fourth or one-fifth of the surface of the grinding plate; and this bed stone has the shape of an annular sector with an eccentric portion, by which it receives from a hopper the material to be ground, whilst the meal, flour, or powder drops through an aperture at the opposite end of the annular sector.”

“ The bed stone and grinding plate may have a suitable inclination towards the aperture, so as to facilitate the descent of the material that is being ground.”

“ The whole apparatus is arranged in such manner that the mill spindle which carries the grinding plate may be adjusted to the proper height by means of levers, screws, &c., motion being given by any suitable means. The bed stone is also adjustable to suit the grinding plate and the material to be ground.

[Printed, 4d. No Drawings.]

A.D. 1855, March 29.—No. 696.

GILLOT, MARIE JEANNE THÉRÈSE, and BEAUVAIS, CÉCILE CELESTINE.—The object of this invention is by a certain mode of treatment to effect the purification of damaged grain, seed, and other vegetable products, and also cochineal which, when damaged by sea water, is subjected to the same process, and flour, which is treated differently.

As regards grain, seed, coffee, tea, other vegetable products, and cochineal, which have been injured by sea water or otherwise damaged, it consists in washing all these substances in cold spring, pump, or well water; the process is to be performed as quickly as possible, the grain, seed, &c., only being allowed to remain in the water sufficient time to cleanse or remove the impurity, and when this is effected the washed substance is to be dried immediately as quickly as possible, *either by exposure to the air, in stoves, or otherwise, the grain*

or substance to be spread out and constantly turned, so as to bring the damp portions to the surface; when dry it is fit for market.

Rice, sago, and tapioca, are to be quickly washed in pump water, and afterwards dried as rapidly as possible.

Coffee requires and will bear the washing process a greater length of time, the after process of drying however must have careful attention.

Tea must be rapidly washed in the coldest water, and when drained, it is in order to revive the aromatic odour, passed into a cold infusion of violets, and when dried must be stored in well closed cases.

Peas and lentils are treated in the same manner as grain.

Flour is first sifted to separate the mites and then passed through a slightly heated cylinder to destroy their eggs.

Cochineal must be washed rapidly but carefully with spring or pump water, otherwise it might loose its epiderm shape.

[Printed, 4d. No Drawings.]

A.D. 1855, April 3.—No. 746.

MAAS, JACOB, and ADAMS, JAMES.—This invention relating to the construction of the grinding surfaces of mills designed for splitting or grinding beans, peas, corn, and all kinds of grain, consists (as stated by the inventors) “in employing the periphery of a stone as the one acting surface, the other acting surface being concave, and adapted to the periphery of the other stone, and held in such proximity to the periphery of that stone which is the runner as to grind or split, as may be required, the grain passed between them. The running stone is circular, as in ordinary; but instead of using the flat side as the grinding or splitting surface we use the periphery, which is cut or dressed for the purpose, the grooves being so arranged as to gather the corn or other grain acted on more or less towards the middle of its breadth. It is mounted on a horizontal axis, and driven by strap or in other suitable manner. The stationary stone or grinding surface embraces about one-third of the periphery of the runner, and extending from near the upper part to nearly the lowest point of that stone. The grain is fed in at the highest point, and is carried round between the grinding surfaces, and escapes at the bottom in a state of

“ flour or split, as the case may be. The matters to be ground  
“ are very quickly reduced, and pass rapidly from between  
“ the acting surfaces, producing less tendency to heat than is  
“ observed in the ordinary grinding mills.”

[Printed, 10d. Drawing.]

A.D. 1855, April 7.—No. 773.

HULL, JOSEPH.—The first part of this invention relates to the so setting out and working the furrows in the grinding surfaces of mill stones, that (it is stated) a larger quantity of flour can be produced in a given time by the same amount of power; it consists in, as described, “ 1st, carrying the furrows through  
“ the main land into the main furrow, when there is more  
“ than one furrow in a set; 2nd, setting out the furrows and  
“ working the stones with a “lead” or divergence from the  
“ center of the stone of not less than three quarters of an inch  
“ on each foot of the diameter of the stone, nor exceeding one  
“ inch and one quarter of an inch on each foot of the diameter  
“ of the stone; 3rd, working an inclined and tangential groove  
“ or ‘worm’ on two opposite sides of the eye of the stone to  
“ ensure the fair feeding of the corn to stones prepared or  
“ worked ” as above described.

The second part of the invention relates 1st, to the use of an exhaustor or fan of approved construction, in combination with stones set out and worked as described in the first part, and, 2ndly, to driving the heated air, the fine dust, and the deteriorated flour from the exhaustor into a suitable chamber, where separation may take place.

[Printed, 6d. Drawing.]

A.D. 1855, May 5.—No. 1003

BEAUMONT, JOSEPH.—This invention relates to an apparatus for drying meal while passing therethrough from the grinding mill to the sieves or apparatus employed for separating the bran and pollard from the flour, which will be less liable to clog the sieves, and (it is stated) the sifting of the flour through silk will be better effected.

For this purpose steam or hot air is employed in pipes placed side by side beneath a trough, which is interposed between the grinding mill and the separating or sifting apparatus. The meal is received into one end of the trough, and is gradually

moved through it towards the opposite end by a revolving helix or spiral vane, and during its passage it is dried by contact with the heated metal of which the trough is constructed. When delivered, the meal is ready for the sifting process. A range of these drying troughs, severally placed side by side may be employed, and instead of pipes, the troughs may be jacketted.

[Printed, 6d. Drawing.]

A.D. 1855, May 28.—No. 1212.

SWINTON, EDWARD GEORGE.—The object of this invention relating to the grinding of corn, bruising of oats, and similar processes, is to economise time, and make the locomotion of wheeled vehicles drawn by horses available for the purpose. It is more especially intended for the use of the army, but is applicable generally, and consists in fitting ordinary grinding mills or machines upon the waggons or carts employed to carry the grain or otherwise, the motive power for driving such mills or machines to be derived from the rotary movement of the travelling wheels on which the waggon or vehicle is drawn; to this end toothed spur wheels are to be fixed on the nave of each of the travelling or running wheels, and by this means rotary motion is to be transmitted by other wheels to the mills, one or more of which are to be suitably mounted in each vehicle. The mill feeding apparatus is also actuated in the same way, and the crushed or ground grain is received in sacks slung beneath the delivery spouts.

[Printed, 1s. Drawings.]

A.D. 1855, June 9.—No. 1314.

SIBILLE, HENRI.—(*Provisional protection only.*)—This invention relating to the decortication and preserving of grain and seeds, is stated to consist in “removing by disintegration or decomposition, partly or entirely, the ligneous or outer pellicle of grain and seeds, by moistening the same with or immersing them in a caustic alkaline solution, such for instance, as caustic soda or lime. This moistening or immersing may be effected by hand, or by means of any suitable mechanical arrangements. The grain or seeds, after having been sufficiently submitted to the action of the



“alkaline solution, are dried at once, or the same may be  
“first washed and afterwards dried, and will be found to  
“yield more and better flour, keep for a greater length of  
“time, and germinate better than if left in the natural  
“state.”

[Printed, 4d. No Drawings.]

A.D. 1855, June 13.—No. 1349.

TURNER, EDWARD RUSH, and TURNER, FREDERICK.—  
The object of this invention relating to the construction of  
machinery designed for crushing and grinding grain, seed,  
and pulse, is to produce fine flour or meal by the combined  
and simultaneous operations of crushing and grinding in one  
machine, and thus effect a saving of motive power.

“The mill for effecting these operations may consist of a  
“suitable framework of wood or iron, supporting a pair of  
“crushing or bruising rollers and a pair of millstones, and  
“also the necessary gearing for driving or actuating the  
“same. The under millstone being the runner, is driven  
“by an upright spindle, which derives its motion from a  
“horizontal shaft by a pair of bevel wheels. The upper stone  
“is fixed in an iron case, upon the upper side of which case  
“rests a frame carrying the two crushing rollers, and the  
“hopper for containing the grain to be crushed and ground.  
“One of these rollers may be of larger diameter than the  
“other, and this larger roller is driven from the same hori-  
“zontal shaft which drives the running stone by means of a  
“driving belt and pulleys or by suitable gearing. When the  
“mill is set in motion the grain or pulse is distributed by  
“means of a feed roller between the crushing or bruising  
“rollers, and after being there crushed it descends through  
“the eye of the top stone on to the runner, where it is ground  
“in the usual manner, and is discharged through a spout or  
“opening for that purpose fitted on to or made in one piece  
“with the case containing the stones.”

[Printed, 6d. Drawing.]

A.D. 1855, June 13.—No. 1355.

BIDDELL, GEORGE ARTHUR.—This invention relates to the  
construction (by combining steel with cast iron) of the cutters  
and grinding surfaces of machines designed for cutting and

grinding vegetable substances. The steel pieces or cutters having previously been shaped to the required form, are disposed in a mould in the precise position they are to occupy relatively when in operation, either in radial, tangent or curved lines, and then the cast iron in a molten state is poured into the mould, which has a cylindrical or other form according to the nature and use for which the grinder or cutter is required. In the cast metal when it has set and cooled, the steel cutters will be found to be firmly imbedded, and to prepare them for use, they will require to be dressed up in a lathe or otherwise, By pressing the steel pieces into the sand of the mould, their cutting edges may be made to stand out in relief from the finished casting, or the cast metal may be afterwards cut or filed out from between them, and the cutters may subsequently be hardened by heating and cooling the cylinder in the ordinary way.

Cutters or grinders of any desired form may be constructed in this manner.

[Printed, 6d. Drawing.]

A.D. 1855, June 18.—No. 1380.

PEAKER, RICHARD, and BENTLEY, THOMAS.—This invention relating to the construction of the auxiliary details of mills applicable to the grinding of wheat and other grain and substances, and to the mode of cutting the furrows in mill-stone surfaces, consist in :—

1st. Apparatus for preventing the ground material from passing off excepting through the appointed channel, and (as stated by the inventors) “to this end, we enclose the stones  
“ or other grinding apparatus by a casing, and adapt thereto  
“ a draft pipe. Within the casing is fixed a partition of perforated metal wire gauze or other such substance, in order  
“ to keep which clear from the passage of air, we cause it to  
“ be passed over by a brush, scraper, or other such apparatus  
“ adapted to the runner. To the draft pipe we also adapt a  
“ series of revolving perforated discs, situate one above  
“ another, and which alternately move into and out of the  
“ said pipe in such order that the area is always intercepted  
“ upon these discs. When in their outward position, a brush  
“ or other such apparatus is caused to operate.”

The plan adopted for preparing the grinding surfaces of mill stones, "is to cut a series of long furrows, and from each " of these one short furrow extending to the outer periphery " of the stone."

[Printed, 6d. Drawing.]

A.D. 1855, July 7.—No. 1528.

WHITE, ALEXANDER.—This invention relates to the constructional details of grinding mills, wherein the upper is the running stone, and the "rhyne" or piece which connects it with the mill spindle is so formed on its upper side, as to answer for a crushing or rolling bed, and to act in conjunction with two rollers above that run loosely on studs carried by a fixed bridge beam which extends diametrically over the stone and is supported by side standards fixed outside the mill casing. The grain in falling from the feeding hopper passes through an aperture in the beam, and drops upon the crushing bed which, as it moves round with the mill spindle, carries the grain beneath the crushing rollers. Thence the crushed grain falls upon a radially corrugated distributing disc, which is fixed on and revolves with the mill spindle, and acts as the means for directing the upward the cooling air currents to the grinding surfaces, to which the air finds admission through five or more horizontal curved passages that severally terminate on the plane of the grinding surfaces, and receive the air from tubes which pass down through the centre of the lower or bed stone, the lower ends of the tubes being open and trumpet shaped. Instead of fixing the distributor to the mill spindle, it may be made to revolve loosely thereon at an accelerated speed by suitable mechanism.

A modification of the crushing section of the mill is also described, and it is stated that arrangements may be made for admitting the air through the eye of the top stone or through both stones if desirable.

[Printed, 10d. Drawing.]

A.D. 1855, July 10.—No. 1538.

RILEY, GEORGE.—(*Provisional protection only.*)—This invention relates to the construction of a mill designed for grinding malt and other substances, the movable "cutting faces" or grinding surfaces being made of chill-cast iron or steel.

The inventor says, "the present mode of grinding malt is  
" by crushing it between rollers, by which means the malt  
" is merely flattened into comparatively large pieces, which  
" are in a great measure protected by the husk from the  
" action of the water in brewing; and I find that in order  
" to obtain the whole of the soluble matter contained in the  
" malt, that it is necessary that it should be cut up into very  
" small particles; & for this purpose I have constructed a  
" mill of cast iron, the working parts of which are in the  
" shape of frustrums of cones; one fixed or stationary, the  
" other moving, the inner face of the fixed frustrum and the  
" outer face of the movable one coming in nearly close con-  
" tact with each other, and being covered with movable plates  
" of cast iron or of steel which contain the cutting surfaces,  
" & which plates when worn out are readily replaced with  
" new ones. These plates are chill cast, by which they are  
" rendered much harder & more durable."

[Printed, 4d. No Drawings.]

A.D. 1855, July 11.—No. 1544.

PRATT, HENRY.—(*Partly a communication from Edward Harrison.*)—This invention relates to the constructional arrangements of grinding mills, comprising those driven either by steam or water, and also wind mills; to the mode of mounting millstones, and adapting to mill axes a spring bearing.

The constructional arrangements refer amongst other matters to the heating and ventilating of mills by means of a central shaft in communication with the flues; the simultaneous cleaning and drying of the grain, and regulations for heating at different seasons of the year; the construction of the engines and boilers, and the manner of disposing them in steam mills; surface condensing; elevators and weighing apparatus, and the arrangement and position in mills of the different apparatus on the several floors.

The cleaning and drying of grain, which during the operation falls into and is repeatedly raised by elevators, is effected as the grain descends through small brickwork passages wherein are tubes roughened like nutmeg-graters and transversely fixed; the attrition against the rough surface of the brickwork and of the tubes, chafes and cleans the grain, the



moisture passing off through the tubes. The grain is also conducted over screens, which have a warm current of air passing through them.

Describes the construction and arrangement of a windmill, and of a wheel which is employed for collecting and transmitting the power of the wind, instead of the ordinary windmill sail. To these mills are applied the progressive system of grinding by means of a large and a small pair of stones.

The construction of a water wheel adapted to the driving of millstones.

The construction and mounting of millstones, the running stone having a metal back and driving hub in combination with a stone face, composed in sections of the requisite quantity and quality of stone. The hub forms the means of connection with the mill axis, and the uppermost stone is stationary.

The accurate facing of millstones so constructed and mounted may be effected by grinding them together, and (it is stated) the stone face of the runner will bear with safety being worn nearly through to the metal back.

[Printed, 3s. 6d. Drawings.]

A.D. 1855, August 3.—No. 1757.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(*A communication.*)

—This invention relates to the construction of mill stones and mills designed for grinding grain and other substances which, during the process does not become heated, and consequently do not lose either weight or aroma. The running or top stone is composed of a number of segmentally shaped buhrs, which fit into a circular iron frame, and collectively form an annular grinding surface on the underside of the stone, which is carried at the top of a vertical mill spindle driven at the desired speed by bevel gearing, and adjustable as to height. The grinding surface of the bed stone, which is stationary and composed of buhrs, is only about one-fourth the area of the grinding surface of the running stone; it has the form of a segmental trough, the sides being so raised as to admit between them only a fourth segmental portion of the annular grinding surface of the top stone, which in consequence during three-fourths of its revolution, runs free. The grain or substance is supplied in regulated quantity from a hopper, upon a portion of the bed stone, which is made to project



beyond the periphery of the running stone, and as the latter rotates the material is gradually drawn between the grinding surfaces, and is ground whilst being carried round in the segmental trough of the bed stone, and finally falls through an opening at its other extremity into a receptacle beneath. The feeding and the passage of the ground material through the mill, is facilitated by inclining the stones, so the mill spindle does not stand upright.

[Printed, 8d. Drawing.]

A.D. 1855, August 23.—No. 1907.

FOUCHIER, VICTOR.—This invention applies to the construction and preparation of the grinding surfaces of mill-stones, the object in view being to divide or break the grain instead of crushing it, for which purpose the stones are channeled in a peculiar manner; and to prevent the formation of lumps and the heating of the flour, cold air is caused to circulate between the grinding surfaces.

The upper mill-stone is composed of several kinds or qualities of stone cemented or otherwise fixed together the softest quality being near the eye. The lower or bed stone is of two qualities naturally softer and both stones are made thinner than usual. The eye of the running stone, which makes from 130 to 150 revolutions per minute according to size, is about an inch larger in diameter at the top than the bottom; air is admitted through the eye of the stone; it passes between the grinding surfaces, and escapes through an aperture in the case side, or through a sifting bag which covers an aperture at the top. There is one principal and one secondary furrow relatively parallel in each segmental division of the two stones, and the minor communicating furrows do not run through the secondary furrows in direct lines as they lead towards the circumference.

[Printed, 10d. Drawing.]

A.D. 1855, August 25.—No. 1927.

STANSBURY, CHARLES FREDERICK.—(*A communication from Amory Felton.*)—This invention of a mill for grinding, consists in what the inventor denominates “a new arrangement of mechanical means for the purpose of producing an improved

“ mill for grinding corn and other substances, and its peculiarity lies in the employment of a horizontal corrugated cylinder in combination with a concave & cap, said cylinder, concave & cap being provided with corresponding flanches spirally arranged. The mill is kept from clogging by the action of vibrating fingers, attached to a reciprocating bar or rod, & operating between the cylinder and cap. The distance between the grinding surfaces of the cylinder and concave is regulated by an adjusting screw in a well-known mode. The cylinder and concave are also provided at one end with crushing teeth, to be employed before the grinding commences upon substances which require to be partly broken down before they are in a fit state for grinding. The mill is fed in the usual way, and the parts are driven by well-known mechanical means.”

[Printed, 6d. Drawing.]

A.D. 1855, September 7.—No. 2022.

HAND, SELBY.—(*Provisional protection only.*)—This is an invention of a combined cake-crushing, oat-bruising and bean slitting machine or mill, which is driven by hand and is so contrived that either of the above operations may be carried on singly, or all simultaneously. The inventor says:—

“ I provide two suitable side frames, between which the bruising rollers or cylinders and the cake-crushing instrument are placed. One of the oat-bruising rollers is placed on the main or driving shaft on which the winch handles are placed, the other roller being mounted at the same level. The splitting mill is placed on the main shaft, the running surface being fixed thereon while the stationary splitting surface being fixed to one of the side frames concentric with the main shaft. A suitable hopper and duct is provided to contain and conduct the beans between the splitting surfaces. The cake-crushing instruments are driven from the main shaft by reducing toothed gear, the two instruments being connected to each other by equal wheels. The different apparatuses are arranged so that they can be readily thrown into or out of gear, so that either one of them can be actuated independently of the others, or any two placed in operation, or the whole three simultaneously.”

[Printed, 4d. No Drawings.]

A.D. 1855, September 12.—No. 2062.

PARTRIDGE, JOSEPH, and KIRKHAM, JOHN.—This invention relating to the process of crushing malt, refers to the construction of the apparatus employed for the purpose, the operative portions whereof consist of two horizontally disposed rollers placed side by side, their axes resting in and passing through suitable bearings adapted to the frame of the apparatus. These rollers are actuated by a handle fixed on the axis of one of them whereon also is a tooth wheel which engages with another tooth wheel of much larger diameter, that is fixed on the axis of the other roller, and by this means one roller is made to revolve much slower than the other. The grain is fed through a flap opening at the bottom of a hopper placed above the rollers, in quantity regulated by a screw, a metallic brush revolving against the flap or plate assisting to make the supply more uniform, so that undue accumulation or clogging of the rollers is avoided.

[Printed, 6d. Drawing.]

A.D. 1855, September 25.—No. 2138.

WRIGHT, WILLIAM, and WRIGHT, JOHN.—This invention relates to the construction of machinery for crushing grain, and is especially applicable to the crushing of barley. "The grain to be operated upon passes first between a fixed plate and a revolving roller, the circumference of which has longitudinal and circular grooves to form teeth, and then between a second fixed plate and another revolving roller, the teeth of which are finer than those of the first roller. By this combination of rollers and plates the grain to be operated upon in passing through the machine is crushed to the required degree at one operation."

[Printed, 6d. Drawing.]

A.D. 1855, October 10.—No. 2264.

NEWTON, WILLIAM EDWARD.—(*A communication*).—This invention relates to the compact arrangement and disposition in one room or apartment of the mill-stones, the bolting cylinders, conveyors, coolers, and elevators, generally employed in and about flour mills for the process of grinding and dressing of flour, which according to the usual arrangements are placed in separate apartments. The bolting cylinder is placed

contiguous to the mill stones, and is driven direct from the mill spindle, which is screw-threaded and works into a worm wheel fixed on one end of an intermediate shaft, there being fixed on the other end of the shaft a tooth wheel that engages with a spur wheel on the axis of the bolting cylinder, over which is placed a conveyor, which receives the ground material delivered by the mill stones from an elevator consisting of an endless band carrying a series of scoops. The flour is stirred and cooled as it passes along the conveyor by a rotating spiral vane, which carries it forward to the opposite end, whence it falls into the bolting cylinder, and is there sifted and sorted by the varying texture of the bolting cloth into the different qualities of flour in the usual way, the "ship stuff" sifting through near the end, and the bran passing out at the end of the bolting cylinder, which is open. The millstones and mill arrangements otherwise are of the ordinary description, but the plan devised for separating the extra fine, the superfine, and the fine, or fine middlings, and for returning certain portions to the mill to be re-ground, are carefully described.

[Printed, 8d. Drawing.]

A.D. 1855, October 12.—No. 2282.

MOORE, THOMAS.—This invention relating to the construction of the operating parts of mills designed for grinding corn and other grain, consists in employing steel and stone grinding surfaces in one and the same mill. The inventor says:—"I form the first and upper grinding surface of a vertical steel cone, which revolves in a correspondingly shaped fixed cone, and below these cones I fit horizontally ordinary grindstones. The corn or other grain is fed into and between the steel cones from a hopper, and in its passage through them becomes very quickly bruised and converted into meal, for which purpose it is well known that steel mills are better adapted than stones. After being so converted, the meal falls between the horizontal grindstones which reduce the meal into flour. The great advantages consists in apportioning each of the grinding surfaces to perform that portion of the grinding operations to which they are best adapted, the steel for converting the grain into meal, and the stones the meal into flour."

[Printed, 6d. Drawing.]

A.D. 1855, October 18.—No. 2338.

**GRAHAM, JOHN.**—(*Provisional protection only.*)—This is an invention of machinery designed for dressing rice and grain, which is made to pass over a succession of rotating grinding or polishing surfaces, disposed one above another on a central vertical shaft, and inclosed by an upright case. These horizontal dressing surfaces may be either of stone or other material, and the case is constructed either of wire work or perforated metal, and in form is preferred to be conical. The grain is conducted to near the center of the upper stone or polisher by a conical funnel, and it is then carried beneath a fixed wire frame to the edge of the rotating polisher, and falls down between its periphery and the outer case upon the next polisher, and so on in succession to be acted upon by those beneath; after passing the last, it is delivered from this section of the machine as cleaned or dressed grain, and deposited upon a disc of cork or wood, covered with sheep skin and fixed on the lower end of the spindle which carries the polisher above. This last operation (it is stated) polishes the surface of the grain, and greatly improves its appearance.

[Printed, 4d. No Drawings.]

A.D. 1855, October 19.—No. 2348.

**SMITH, NATHANIEL.**—(*Provisional protection only.*)—This invention, relating to the construction of mills designed for grinding or reducing grain and other substances, is stated to “consist in the employment of two cones placed in a reverse direction to each other, that is to say, with the base of one cone opposite the apex of the other; and in mounting these cones, or one of them, in such manner in suitable bearings that the distance of one conical roller from the other may be easily regulated, whereby the degree of fineness to which the substances are to be reduced will be determined. I find it desirable to drive the conical rollers at different speeds, and to cause one of the rollers to advance towards and recede from the other by means of wedges, carried by a cross bar, set in motion by turning a nut on a screwed rod connected to the bar, so as to give motion to the wedges at both ends of the bearings of the moveable roller at the same time.”

[Printed, 4d. No Drawings.]



A.D. 1855, October 20.—No. 2352.

PARANT, PIERRE ANTOINE HENRY.—This invention relates to the art and process of “manufacturing artificial mill-stones  
“ with any suitable vitrifiable materials.”

“ A mixture being prepared with kaolin, or any other of the  
“ fusible materials used for the manufacture of china, hardware,  
“ or glass, I mix with this composition fragments of wood, coals,  
“ seeds, or other combustible materials, their size and nature as  
“ well as their relative position in the artificial millstones being  
“ regulated according to the kind of work for which the stones  
“ are intended. The mixture is then placed in suitable moulds,  
“ shaped as sectors of the stone which is to be manufactured,  
“ and subsequently baked. The moulds are used, however,  
“ only for the purpose of giving the sectors the required form ;  
“ the sectors are then withdrawn therefrom and introduced  
“ into the oven, in which they are to undergo the baking pro-  
“ cess. The sectors are then put together so as to form a  
“ circular stone, and are united or bound together by iron  
“ hoops as usual. While baking, the combustible fragments  
“ burn out, and the sectors remain porous, or full of small  
“ recesses, as is the case with the natural millstones ; but the  
“ pores are regulated in the mixture, so that the largest may  
“ be nearest the centre, and the smallest gradually towards  
“ the circumference.”

[Printed, 6d. Drawing.]

A.D. 1855, October 23.—No. 2365.

WILSON, WILLIAM. — (*Provisional protection only.*) — This invention relates to the construction of and the working details of machinery designed for crushing grain and other substances. The inventor says :—“ In crushing machines it is  
“ very desirable to be able to vary the distance between the  
“ crushing rollers, to suit the grain or other substances to be  
“ crushed. In order to accomplish this, and to keep the  
“ distance between the rollers equal at each end thereof,  
“ I employ a bar with two inclined planes ; this bar is placed  
“ parallel to the axis of the adjustable roller, and each inclined  
“ plane, when the bar is moved endwise, acts on a prolonga-  
“ tion of the bearings in which the adjustable roller revolves.  
“ The bar is moved endwise by a screw and nut or other suit-  
“ able mechanism.”

[Printed, 4d. No Drawings.]

A.D. 1855, October 29.—No. 2408.

**RILEY, GEORGE.**—The object of this invention of a “roller mill for grinding malt,” is to so disintegrate the malt that by subsequent good management in the brewing process, a better and more abundant extract may be obtained, than malt prepared by one pair of plain rollers has heretofore yielded. The inventor says:—“I invented and constructed a mill, which effected the desired end in the most perfect manner, and obtained provisional protection therefor, dated July 10, 1855, when it pleased the Government to enact a law (18 & 19 Vict., cap. 94, sec. 37), forbidding the use of any mills for grinding malt for brewing other than those constructed with plain smooth metal rollers only.”

In order to meet the requirements of this new law, and at the same time effect the object in view, the inventor has constructed and uses for the purpose of crushing malt into particles not larger than common musket gunpowder, a plain smooth metal roller mill, consisting of two or more pairs of plain metal rollers horizontally disposed, one pair immediately over the other, so that the malt, which is fed in regulated quantity from a hopper above, having passed between the top pair of rollers, falls thence directly between the second pair beneath. Means are provided for regulating the distance apart of the two rollers comprising each pair, and of causing by means of different sized wheels on their axes respectively, the two rollers of each pair to travel one roller much faster than the other, so that whilst passing between the top pair of rollers, the malt undergoes a combined crushing and grinding process, that is repeated by the second pair which are set closer together, in order that the particles which have passed between the first rollers may be broken.

[Printed, 8d. Drawing.]

A.D. 1855, November 2.—No. 2450.

**PATTERSON, JOHN.**—This invention, relating to the construction of machinery designed by means of rollers to effect the process of grinding, crushing, cutting, and hulling or shelling grain and other farm produce, and adapted to the grinding of minerals and other substances, consists (as stated by the inventor) “in placing the rollers between which the grinding is effected (in that description of mills commonly called

“ roller mills), in such a manner that the axis of each roller shall lie in a different plane to the other, for the purpose of producing a wrenching or compound action in grinding; or in any modification of this arrangement, such as the use of a plate instead of one of the rollers, and so arranged as to produce a similar effect.”

“ Varying the distance between the grinding surfaces, by placing one of the rollers on a lever which is adjustable by a screw or otherwise.”

“ According to another arrangement, a diagram of which is shown . . . a reciprocating plate may be used with straight teeth, or projecting ribs cut in its surface, in conjunction with an inclined roller . . . also grooved or roughed. The teeth or projections of the reciprocating plate and roller will in this case also cross each other at the point of contact, and produce the combined crushing and shearing or wrenching action herein-before referred to.”

[Printed, 10d. Drawing.]

A.D. 1855, November 2.—No. 2454.

LEWIS, JOHN, and EDWARDS, JOSEPH.—(*Complete Specification but no Letters Patent.*)—This invention relates to a mode of working malt crushers by means of a lever, which moves on a fixed fulcrum, and is worked up and down by hand after the manner of a pump handle. To the short end of the lever is jointed a link or connecting rod, the lower end whereof is coupled to the central throw of a crank shaft, which has fixed upon one end a spur wheel that engages with a pinion on one end of the axis of one of the crushing rollers, the other end of the axis of this roller carrying a fly wheel. The second crushing roller is actuated by a small wheel on its axis, which also engages with the pinion on the axis of the other roller and obtains motion therefrom, and the mill is fed from a hopper above; the novelty of the arrangement, consisting in substituting the crank shaft and pump handle lever for the ordinary winch.

[Printed, 10d. Drawings.]

A.D. 1855, November 5.—No. 2485.

NEWTON, ALFRED VINCENT.—(*A communication.*)—This is an invention of means devised for preventing the clogging of the passages about a flour mill, caused by the adhe-

sion of the flour to the internal surfaces of those parts and passages of the mill which have become moistened or wetted by the condensed vapour evolved by the flour, when it becomes heated by the friction of the grinding surfaces.

The object of the invention is effected by means of a fan or blower, which sends a draught of cool air over and around the upper mill-stone between the stone and the curb, to cool and dry the flour and prevent "sweating on the stones and curb," there being fitted inside the curb annular and tangent flanges to guide the air current, and in order the more effectually to cool the flour, a second fan may be employed.

[Printed, 10d. Drawing.]

A.D. 1855, November 10.—No. 2533.

GREEN, EPHRAIM, and GREEN, JACOB.—(*Complete Specification but no Letters Patent.*)—This invention, relating to the process of crushing malt, has for its object the prevention, whilst the mill is in operation, of the escape of the fine particles or dust of the malt which ordinarily takes place, and the consequent loss incurred thereby. This result is effected by inclosing the operating parts of the mill in a cylindrical case, having one opening at the upper side in communication with the feeding hopper, and another underneath covered with the delivery spout, that is closed and conveys the malt into a sack drawn closely round its nozzle. The internal surface of the casing is brought nearly close to the outer sides of the crushing rollers, which are thereby kept clear of any malt that, having passed between the rollers adheres to them, and the passing down of whole grain outside instead of between the rollers is prevented.

[Printed, 6d. Drawing.]

A.D. 1855, November 20.—No. 2612.

NEWTON, ALFRED VINCENT.—(*A communication from Pierre Bruno Joseph Elie Cabanes.*)—This invention relates to a "mechanical sifter or bolter," designed for the process of dressing flour, and consists principally of a sieve suspended over a shallow box placed so as slightly to incline from a horizontal position; both sieve and box have reciprocating motion imparted to them by the mechanism both vertically and horizontally, each moving in opposite directions simultaneously for the purpose of separating the bran from the flour, and the latter into the several desired qualities of fineness, which pass



into three separate receptacles placed beneath openings in the bottom of the box, the sieve or bolting cloth, which may be of wire gauze or otherwise, having in its length three portions or sections of different degrees of fineness, and during its progress the flour is freed from dust by fan blowers. There is also adapted to the lower edge of the sieve what is termed a floating cloth or valve, arranged in such manner as to permit the admission of air between the bottom of the sieve and the box when they are separated, and prevent its escape when they approach each other, so that the air is compelled to pass up through the meshes of the sieve and force up the lighter of the particles composing the meal to the surface, and by this means the discharge of the fine flour is facilitated.

[Printed, 8d. Drawing.]

A.D. 1855, November 27.—No. 2678.

JOHNSON, JOHN HENRY. — (*A communication from Charles Theodore Laborey.*)—(*Provisional protection only.*)—This invention relates to the process of cleaning and hulling grain and seed, and to the constructionary arrangement of the apparatus, which is mounted in a suitable wood or iron frame. The grain is placed in a regulating hopper, and thence falls upon a perforated vibratory plate, which removes from the grain small grits or other extraneous matter. The grain falling through the plate enters a fixed cylinder lined with steel plates roughened like a file, and rotating inside the cylinder are curved blades or arms roughened in the same manner. This part of the operation is repeated in another similar cylinder, on leaving which the grain passes through an air current, where the skins and husks are blown off, and the grain falls into an endless travelling belt fitted with brushes, which brush it against a set of roughened plates, that remove the husks entirely, and they are afterwards separated from the grain by one or more vibrating sieves. Moist or wet grain preparatory to hulling, should be well cleaned and soaked in water varying in temperature from 86 to 120° and whilst still warm after removal, the grain should be submitted to a hulling machine of somewhat similar construction, but having in addition the outer cylinder inclosed by a hot air casing, to prevent the cooling of the grain, and facilitate the operation, which is completed by a cylinder fitted with brushes and a fan blower.

[Printed, 4d. No Drawings.]



A.D. 1855, December 17.—No. 2845.

BRACEGIRDLE, CHARLES.—This invention relates to the employment of silk known as “China threads” for the manufacture of bolting cloths, and which (it is stated) is considerably cheaper, and capable of dressing in a given time a much larger quantity of flour than bolters made from Italian silk or other materials, either separately or combined. It “consists  
“ in manufacturing bolting cloths of hard spun and twisted  
“ silk wire, as being cleaner and better adapted for dressing  
“ and sifting wheat flour than the materials heretofore employed in the manufacture of bolting cloths, and further, by  
“ the use and employment of bolting cloths made of the above  
“ improved material I am enabled to produce a better quality  
“ of flour and a considerably larger quantity thereof in a  
“ given time than by the use of bolting cloths as heretofore  
“ manufactured.”

[Printed, 4d. No Drawings.]

A.D. 1855, December 20.—No. 2883.

ANTROBUS, PHILIP.—This invention relating to the process of preserving and packing flour by hydraulic pressure in metal cases, and to subsequently soldering or closing such cases hermetically, is effected in the following manner:—“A hollow  
“ trunk or chamber of like section to the cases is employed,  
“ and by preference, fixed in an upright position; at the  
“ lower end is an opening to introduce a metal case, and to  
“ inclose it therein with its open end upwards. The flour to  
“ be packed and preserved is to be introduced at the other  
“ end of the trunk or chamber; a tin plate of the size suitable  
“ to close the case is placed on the upper surface, and then  
“ the ram of the hydraulic or other powerful press is caused  
“ to enter the chamber or trunk till the flour is all forced into  
“ the case, and also the metal plate, when the case is to be  
“ taken out and the cover is to be soldered in or hermetically  
“ sealed.”

[Printed, 10d. Drawing.]

A.D. 1855, December 20.—No. 2885.

DEVAUX, ALEXANDER CHARLES LOUIS.—(*Provisional protection only.*)—The object of this invention relating to the construction of machinery adapted to the process of crushing and grinding

grain and vegetable and other substances, is to facilitate the grinding operation, and to this end, the inventor proposes "to mount a live stone on a horizontal shaft, and face up one or both sides thereof as grinding surfaces. To one side, or to the two opposite sides of this stone, I apply a stationary burr stone or its equivalent, of a semicircular, segmental, or other suitable shape, and those side stones I so arrange with respect to the middle stone, that suitable space shall be left between them for the passage of the corn or other material from the damsel or feed cups to the grinding surfaces; the space will then contract so as to ensure the complete grinding of the material under operation before its exit from between the grinding surfaces. The adjustment of the stones with respect to each other may be effected by slides and set screws. By this arrangement it will be understood that one or both sides of the rotary stone may be employed for grinding or crushing, and that by reason of the grinding surfaces being set so as to act in a vertical plane, the delivery of the ground or crushed produce will be facilitated and the heating of the stones will be to a great extent prevented. In place of giving rotary motion to the middle or circular stone, the side stones or grinding surfaces may be set in motion.

"I would remark that instead of stone, metal suitably ribbed or roughened, may under some circumstances be employed with advantage."

[Printed, 4d. No Drawings.]

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1856.

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A.D. 1856, January 12.—No. 95.

**FREELAND, ALEXANDER BANKIER.**—(*Provisional protection only.*)—This invention relates to the process and the apparatus employed in the preparation of flour, which is effected by means of compression, with a view to its better preservation for long keeping, and to render it less bulky for transit. The apparatus employed consists of a hydrostatic press fitted with a fixed overhead piston or plunger, that sinks into the packing case which is placed in a receptacle or holder, when the latter

is raised on the ram of the press, the required quantity of flour being deposited in the case from a hopper. The holder is provided with four wheels, by the aid of which it is easily moved on rails to and from its position upon the ram, and its sides, which are held by clamps or otherwise, are to be opened by a lever, to admit of the removal of the case, which after being hermetically sealed is ready for transport.

[Printed, 4d. No Drawings.]

A.D. 1856, January 28.—No. 221.

BROWN, PETER, and BROWN, GEORGE. — (*Provisional protection only.*)—The object of this invention is to improve the ordinary mode of cleaning, dressing, preparing and rendering suitable for food, a certain description of grain called “Dari,” and known as millet, which (it is stated) “has been comparatively useless as an article of food, in consequence of the presence of its natural husks and other impurities.”

The process of cleaning, dressing, or preparing the dari, and the machinery employed for the purpose is similar in construction to the machines employed for cleaning and dressing rice, and after the cleaning and preparing process, the dari may be ground into flour, and by these means “such grain or seed may be rendered an excellent article for human consumption as food.”

[Printed, 4d. No Drawings.]

A.D. 1856, February 29.—No. 520.

GRAHAM, JOHN.—The object of this invention relating to machinery constructed for the process of cleaning and dressing rice and other grain, is (as stated) to hasten the operation of the machine “by rendering the operation continuous instead of intermittent as at present. This I am enabled to effect by supplying the material to be operated upon in a continuous stream to one end of the dressing machine, and causing a simultaneous discharge of the dressed grain at the other end thereof. The case for containing the stones or cleaning surfaces I make of wirework or perforated metal, and by preference of a conical form, and I shape the periphery of the stones or polishing surfaces to correspond thereto. On the central driving shaft I fit either one stone or two or more stones, which, with the cylinder, may be set either

“vertically, horizontally, or at an angle as thought most desirable for the material under treatment. When two or more stones or polishing surfaces are used I either combine them so as to form one compact dressing surface, or arrange them with intervening spaces between the stones, which spaces may be occupied or not with brushes or soft rubbing surfaces.”

[Printed, 10*d.* Drawing.]

A.D. 1856, March 12.—No. 599.

CHALLENGE, LIPHAR MATHURIN.—(*Provisional protection only.*)—This invention relating to the constructional details of those parts of corn mills which force, regulate, and direct an air current between the grinding surfaces of the millstones consists (as stated) “in casing in the mill-stones in such manner that air can only enter through the eye of the upper stone, and in connecting therewith a fan or ventilator, whereby the air is drawn through the centre or eye, between the two stones, and out from the periphery thereof, thereby constantly drawing in a fresh supply of air, keeping the stones cool, and not only improving their efficiency, but also the yield from a given quantity of corn, as compared with mills in which the air is otherwise introduced or admitted.”

[Printed, 4*d.* No Drawings.]

A.D. 1856, March 17.—No. 636.

AMOS, JAMES.—(*Provisional protection only.*)—This invention of a flour dressing machine is concisely described as follows:—

“The cylinder of the flour dressing machine is of a conical form, and placed in an upright or vertical position, with the smaller end of the cone upwards, the spindle of the brushes being raised and lowered by means of set screws or otherwise.”

[Printed, 4*d.* No Drawings.]

A.D. 1856, March 22.—No. 675.

PRATT, HENRY.—This invention relates to the construction of fire-proof mills and bakeries, wherein are to be progressively and extensively carried on the preparatory processes of treating the grain, and the subsequent grinding of it; the bolting

or dressing and other processes necessary for manufacturing the ground material into flour; and the mixing, kneading, and making it into bread, including the bakery department. The machinery and apparatus in these mills is to be driven by steam power combined with a wind-wheel of peculiar construction, forming part of the subject-matter of a former Patent dated July 11, 1855, No. 1544, to which the present invention is in a great measure supplementary.

With each wind-wheel there is a steam engine arranged to work conjointly by means of pulleys and bands, so that the steam engine in each case acts as a regulator, and twenty of these combined steam engines and wind-wheels are to be employed to actuate the various machines and apparatus contained in the mill, which is a circular building built with a lofty central shaft or ventilating tower.

The mode of mounting and regulating the running stones of the grinding mills differs in detail from the former method, the bearing of the vertical axle of the mills being trumpet-shaped, and is raised by the short end of a lever having its outer end held down by elastic bands sufficient in number to keep the grinding surfaces of the stones in proper working contact. The upper part of the bearing is shaped to form an annular cup round the axle, wherein to receive a lubricant.

The construction of the baking oven is described; and also special constructional arrangements in the steam engines employed, and which are more particularly described in the second vol. of Abridgments, Part 1, of the "Steam-engine" series.

[Printed, 2s. 8d. Drawings.]

A.D. 1856, April 1.—No. 782.

ASHTON, JAMES.—(*Provisional protection only.*)—This invention relating to the constructional arrangements of machinery designed for bruising or breaking grain and other substances preparatory to the grinding process is described by the inventor as follows:—"I use an additional pair of stones fixed horizontally above the ordinary stones, each stone being secured in a metal casing, and connected to the main spindle by an additional spindle, upon which the lower stone and casing, being fastened by keys, revolve at the same speed as the ordinary stones; the top stone being stationary, and



arrangement of rotating serrated discs or circular saws. The inventor says:—"I mount on an axle or shaft a series of serrated discs of uniform diameter and thickness, and I set between them washers of somewhat superior thickness, so as to provide intermediate spaces between the serrated discs. Another axle or shaft is provided with a similar arrangement of serrated discs, and intermediate washers arranged alternately thereon, in such a manner as to admit between the saws or discs of one axle or shaft the cutting edges of the second series, similarly constructed and arranged on the other shaft. These two sets I mount in suitable bearings at the bottom of a hopper or box, into which is placed the grain or seeds intended to be operated upon, and I adjust the position of the two sets of rotating discs relatively to each other, in such a manner that the space between the cutting edges of the one set of saws or discs and the intervening washers of the other set will be sufficiently small to prevent the uncrushed grain or seed from falling through, and will allow only the broken grain to pass out of the box. The axles of the two sets of saws are geared together, and a rotary motion is imparted thereto by hand or other motive power. It will sometimes be found convenient to fit up this apparatus in duplicate in the same frame, one arrangement or pair of shafts with their serrated discs being of a coarser gauge than the other, to suit different kinds of seeds, one set of discs for example being adjusted for splitting beans, and the other for crushing oats."

[Printed, 8d. Drawing.]

A.D. 1856, July 1.—No. 1547.

HAY, JOHN, and HAY, JAMES.—(*Letters Patent void for want of Final Specification.*)—This invention relates to the manufacture of pearl barley, in the process of which (as stated) it has been customary to reduce the barley at one operation or by various stages to the size required, by means of a barley mill, but according to this invention after the barley has been subjected to the first stage of reduction in a barley mill, it is to be passed between a pair of millstones as a second operation, and after this stage of the process, it is to be finished in a barley mill, whereby (it is stated) expedition and economy are obtained.

[Printed 4d. No Drawings.]

A.D. 1856, August 5.—No. 1843.

MARPLES, THOMAS. — (*Provisional protection only.*) — This invention relates to the constructional details of mills designed for grinding grain, drugs, and other mineral and vegetable substances. These mills may be worked by hand or power, either vertically or horizontally, preference being given to the former position of the running stone, which has a circumferential grinding surface that operates in conjunction with a fixed concave grinding surface which corresponds to the arc of, and is capable of adjustment either nearer to or further from the circumference of the running stone, which is mounted on a horizontal axis. The grooves or furrows on the grinding surfaces are diamond cut, or aslant from each side, and meet so as to form a series of angles round the centre of the running stone, and up the centre of the concave surface of the stone, which is stationary. The grain or substance is fed from a hopper in a regulated quantity by means of an eccentric, is conducted by a shoot to the grinding surfaces, and falling between them is broken and ground whilst passing down.

[Printed, 8d. Drawings.]

A.D. 1856, August 25.—No. 1979.

MARPLES, THOMAS. — (*Provisional protection only.*) — This invention relates to the construction of mills adapted to the grinding of corn and other grain and vegetable substances. The running stone is fixed on a vertical axis, and is driven by a pair of bevel tooth wheels, one of which is fixed on the axis and disposed in a circular cavity, formed concentrically in the underside of the stone, which has a deep broad rim that sinks into an annular recess in the bed stone. The grain is fed from a hopper above and falls between the chamfered outside edge of the running stone, and the outer wall of the recess, and whilst passing down is crushed and broken, the grinding taking place between the underside of the rim of the running stone and the bottom surface of the recess in the bed stone, the internal annular wall of this recess being low to allow of the ground grain passing over.

[Printed, 8d. Drawing.]

A.D. 1856, August 25.—No. 1980.

PLUMMER, WILLIAM FREDERICK. — (*Provisional protection only.*)—The object of this invention is to prevent air passing into grinding mills excepting through the eye of the running stone, and an arrangement of apparatus for separating the fine flour or “stive” from the air which has passed through the mill. This is effected by mounting “on the top stone an  
“ annular trough, which surrounds the eye of that stone, and  
“ into this trough dips a tubular projection from the case.  
“ In the trough I insert water or other liquid in sufficient  
“ quantity to make an air-tight joint, and I thus prevent air  
“ from entering the case except by the eye of the top stone.  
“ The current of air down the eye I produce by an exhaust  
“ apparatus, which draws the air upwards out of the case  
“ after it has passed between the grinding surfaces, but the  
“ meal falls down the ordinary shute or discharge spout.  
“ This spout I fit with a pair of hinged valves, which are  
“ connected together and open and close alternately, so as to  
“ prevent an up draft of air through the meal spout, and  
“ below the lower valve a roller is mounted for discharging  
“ by its rotation the meal in a continuous stream. The air  
“ which passes up the exhaust apparatus enters, together  
“ with the stive or fine flour which it carries with it, into a  
“ rotating chamber, the periphery of which is formed of wire  
“ gauze, or other porous fabric. This chamber, which is  
“ intended to separate the stive from the air, is set at an  
“ incline, and I prefer to make it of an octagon form. As it  
“ rotates it is acted upon by beaters, which clear the meshes  
“ of the fine flour, and thereby facilitate the discharge of the  
“ air from the chamber.”

[Printed, 4d. No Drawings.]

A.D. 1856, August 26.—No. 1985.

BUSH, WILLIAM FREDERICK, and HEWITT, WILLIAM. — The object of this invention is the manufacture of artificial buhrs for millstones to be used for grinding grain in lieu of the French or other buhrs in general use, and which require to be removed and “tooled” as soon as they become smooth, and glaze from the effects of wear. The materials employed in the composition of these artificial buhrs are pulverized, and

when mixed and reduced to a plastic state, are shaped to the required form in moulds, and when dry they are burnt in a kiln, the porosity of the natural buhr being imitated by the introduction into the plastic mass of a quantity of (by preference) hemp seed, that burns away in the kiln and leaves the buhr full of holes or cavities, which have cutting edges, rarely (it is stated) requiring to be tooled or dressed, and capable of grinding the grain "in a very superior manner."

The substances employed in a powdered state consist of flint, Cornish stone, China clay, felspar, Irish flint, and common clay; to these collectively a due proportion of water is added, and then the combined mass is worked into a plastic state in a mill, the hemp seed more or less according to the required porousness of the buhrs, being added during the mixing process. The inventors say:—"In making use of the natural flint in combination with the composition aforesaid, we construct the top and bed stone (of mills) with a cap made of iron, and also a rim of the same metal; round within this rim we form the stone, composing it of layers upon layers of flint, grouted or cemented together by pouring in our before-described composition or cement, thus uniting the flints firmly together, the whole being retained in solid by the cap and rim."

[Printed, 4d. No Drawings.]

A.D. 1856, September 6.—No. 2085.

HODGE, PAUL RAPSEY.—This invention relating to the constructional arrangements and working details of mills adapted to the grinding of wheat and other grain, consists in:—

1st. Constructing the "runner and bed of a mill of cast or wrought metal to receive water internally as a cooling medium, and also to circulate and convey water in and out of these bed stones and runners for the purpose of carrying off the caloric generated by the friction of the grinding surfaces, the grit or burr stone being let into the recesses formed around the skirt of the bed and runner."

2nd. Constructing "a casing around the bed stone and runner of wrought metal having an annular chamber to circulate water through as a cooling medium."

3rd. Circulating water in chambers around the trunks of screw conductors, elevators, or meal or flour chambers for the



purpose of further cooling the meal or flour after it has passed through the mill.

4th. "The use of a current of air passing between the grinding surfaces by exhaustion, in combination with water, as cooling mediums, and in the peculiar construction and arrangement of such casing to effect the object intended."

[Printed, 8d. Drawing.]

A.D. 1856, September 13.—No. 2148.

BROOMAN, RICHARD ARCHIBALD.—(*A communication.*)—(*Provisional protection only.*)—This invention relating to the constructional auxiliary details of grinding mills, with a view of causing the forcible passage of a current of air between the grinding surfaces of the mill stones, "consists in casing in the mill stones in such a manner that air can only enter through the eye of the upper stone, and in connecting therewith a fan or ventilator, whereby the air is drawn through the centre or eye between the two stones and out from the periphery thereof, thereby constantly drawing in a fresh supply of air, keeping the stones cool; and not only improving their efficiency, but also the yield from a given quantity of corn or other grain, as compared with mills in which the air is otherwise introduced or admitted."

[Printed, 4d. No Drawings.]

A.D. 1856, September 18.—No. 2190.

PLUMMER, WILLIAM FREDERICK.—This invention relates to the preparation of hard wheat and other hard grain for the grinding process. The desired effect on the grain is to be produced by passing or running it "through a damping machine of a peculiar construction, whereby I am enabled to impart to the individual seeds the requisite amount of moisture for softening the outer coating, and thus permitting of the easy removal of the bran. The seed I conduct from a hopper to one or more pairs of damping rollers, which are mounted in a suitable framing, and receive rotary motion by bands or gearing driven by steam or manual power. One or both of the rollers of each pair I cover with flannel or other suitable absorbent, and I cause jets of water to fall upon one of the rollers in a regulated quantity. The seed passing down by its own gravity between the rotating rollers will be pressed by the moist yielding surface, and



“ moisture will be thus imparted to the individual seeds  
 “ The rollers are held in contact by springs or weights, which  
 “ will yield to any undue pressure, but when the apparatus is  
 “ working properly will prevent more than a thin stream of  
 “ seeds passing between the rollers. The supply of seed and  
 “ water I propose to regulate by the speed of rotation of the  
 “ rollers.”

[Printed, 10d. Drawings.]

A.D. 1856, September 25.—No. 2250.

FROST, ROBERT. — This invention relating to the forcible introduction of air between the grinding surfaces of millstones and to a mode of causing the meal or ground products to pass over heated surfaces or exposing them to currents of heated air, consists in artificially heating the air to a temperature of 140° Fahr. before it is forced through the mill, and this may be effected by passing the air through pipes heated by steam or by other convenient means, into a pipe which conveys and directs it into the eye of the runner, and it is thence forced down to and between the grinding surfaces. The inventor states “that by thus using heated air all condensation of vapour is prevented, and the ‘pasting’ of the millstones whilst grinding damp wheat or grain is almost impossible; the stones grind more quickly, a greater quantity of fine flour is extracted from the wheat or grain and the quality of the flour obtained is improved as compared with what is produced by ordinary grinding, and also as compared with what is produced when grinding with the aid of air at the natural temperature, forced or induced to pass by exhaustion through between the stones as heretofore practised.”

[Printed, 4d. No Drawings.]

A.D. 1856, October 1.—No. 2291.

QUENTIN, CHARLES LOUIS HENRI. — (*Provisional protection only.*)—This invention, relating to the manufacture of artificial millstones, is described as follows:—

“ I take any of the well-known earths or clay commonly  
 “ used for making stone ware or pottery, either one kind alone  
 “ or a combination of several kinds mixed in such proportions  
 “ as will be found most useful. I reduce the said clay or  
 “ earths to a pulpy or plastic state, then mould it to the size

gradually receive whilst passing through, the degree of crushing or dividing required. The roller is actuated by means of a spur wheel on its axis, in gear with a pinion fixed on the crank shaft of a high pressure steam engine, which together with the crushing apparatus is erected on the same foundation. A screen or sieve may be employed to receive and sift the crushed substance as it falls from the apparatus, the particles falling into separate receptacles according to size. A second or smaller roller and fixed concave surface roughened respectively in the same way, may be added to the apparatus for further reducing the larger particles after they have passed the sieve.

[Printed, 4d. No Drawings.]

A.D. 1857, February 13.—No. 427.

CLARK, WILLIAM STETTINIUS.—(*A communication.*)—(*Provisional protection only.*)—This is an invention of apparatus designed for grating substances by means of roughened surfaces, or by surfaces studded all over with short projecting teeth. Two kinds of apparatus are exhibited, one operating by means of an inclosed rotating disc, against the toothed surface of which the substance is pressed by the reaction of a helical spring, and the other a cylinder, having its surface furnished with similar teeth and also inclosed in a case, through which at the under part in each apparatus there is an opening for the particles, which the grating surfaces have detached, to fall through. Both apparatus are operated by crank handles.

[Printed, 6d. Drawing.]

A.D. 1857, March 24.—No. 819.

COLLYER, ROBERT HANHAM.—This invention relates to the process of cleaning and purifying of wheat and other grain, and to the apparatus employed, which consists of a cylinder or drum having its axis mounted in suitable bearings to revolve concentrically within a fixed cylindrical case of wire net, at the rate of from 2 to 300 revolutions per minute. The surface of the cylinder is made rough for the purpose of causing the progress of the grain, which is fed therein from a hopper, *through the annular space formed between the drum and case,*

the grain previously cleaned from foreign matters and seeds, being moistened with water at the ordinary temperature. The shell or hull of the grain is rubbed off by the friction not of the cylinder but by the separate grains rubbing against each other in their moistened state; the fresh air supplied by a fan blower penetrates through the wire casing and cools the cylinder, and the detached matters and residue escape through the meshes of the wire. If not thoroughly cleaned by the first operation, the grain may be passed through this apparatus a second time, before it is conveyed to the brushing apparatus, which consists of an outer frustum shaped conical casing of screen-wire supported by a suitable frame, and having mounted within it to revolve concentrically on its axis, a drum cylinder of corresponding form and furnished with brushes longitudinally fixed on its surface. In this apparatus as the grain passes through the space from end to end between the cylinder and the casing, all the particles of hull or shell that remain are removed by the brushes, and finally blown away by a winnowing fan.

[Printed, 8d. Drawing.]

A.D. 1857, April 3.—No. 928.

SMITH, JOHN.—This invention relates to the construction of apparatus designed for use in the process of making the brushes employed in flour dressing machines. In describing the operation the inventor says, "I place or distribute the bristles on a board or platform made in two parts longitudinally of the length the brush is required to be made. I then transfer the said board or platform with the bristles upon it to the surface of the machine, which has a longitudinal slot or groove formed by a moveable jaw. The bristles being placed across the said slot or groove transversely, I pass a cord or band over them parallel with and over the slot or groove; a bar or blade is then caused to descend upon the cord or band, and press it with the bristles partially into the slot. The board or platform is then withdrawn, and glue is introduced into the gutter thus formed by the bar or blade, which bar is then further pressed down into the slot until the bristles are doubled up at each side of the bar, and by means of the moveable jaw are held in that doubled position until the bar or blade is withdrawn. A

" and shape I require for the mill-stone, and bake or burn  
 " in any convenient manner. To secure the necessary hold  
 " furrows, or ridges in it, I place pieces of wood or other  
 " suitable material of the shape or size required in the  
 " mould, which after it is baked or burnt will be either  
 " sumed or easily removed, leaving the holes, furrows,  
 " ridges perfectly made without any further trouble."

[Printed, 4d. No Drawings.]

A.D. 1856, October 6.—No. 2335.

DUNLOP, ANDREW.—This is an invention of apparatus  
 signed for dressing flour or meal, and so operates mechanically  
 as to cause the alternate slackening and tightening of  
 dressing cloth, which consists of a suitable permeable material  
 and on which the meal or flour is deposited. The sides  
 of the cloth are made fast to two vibratory bars, slightly  
 inclining from a horizontal position, and caused by cam  
 rapid intervals to approach each other and slacken the cloth,  
 and then by the reaction of springs suddenly separate, and  
 tightening the cloth throw upward the meal or flour, which  
 enters upon it at its highest end. The larger particles are  
 thrown higher than the finer, which descend first and are sifted  
 through the cloth, whilst the larger particles, by reason of the  
 inclination of the cloth, are by degrees carried towards and  
 over its lower end.

Describes a combined modification of the above, consisting  
 of several cloths of different degrees of fineness placed one  
 above another, and acted upon in the same way by side rails,  
 to which they are fastened. By this arrangement the bran is  
 taken out by the first or upper cloth, which is the coarsest,  
 and the remainder of the ground substance is separated by the  
 other cloths in succession, each quality so obtained having  
 a different commercial value, the finest flour which has passed  
 all the cloths in succession being found at the bottom.

[Printed, 1s. Drawing.]

A.D. 1856, November 24.—No. 2787.

BRICKLEY, HENRY.—This invention, relating to the construction  
 of mills for grinding wheat and other grain with a  
 view to economic working consists in:—

*1st.* The mode adopted for imparting power to mill-stones  
 by means " of a vertical shaft having three cranks, from which

A.D. 1857, April 28.—No. 1192.

AGER, WILSON.—This invention relates to the construction of apparatus for treating rice, one half portion or section thereof being designed for removing the husk from paddy or rough rice, and the other half for cleaning off the inner skin of the grain ready for use. The process is effected by what is called a "shell and burr" both of which revolve in opposite directions. The shell has the form of a cylinder, one half of its length being larger in diameter than the other part or section, and the burr which revolves concentrically within it at one end, has the same form, an annular longitudinal space existing between the shell and burr in the two sections which, where they merge one into the other, have the form of a conic frustum, upon which, fixed to the burr, is a spiral vane, that moves the grain from the first or shelling section, to the second or cleaning section of the apparatus. The two surfaces respectively of the shelling section are serrated or grooved longitudinally in opposite ways, so that when the rough paddy is passing through, the grains being turned into position by deflecting blocks, are severally caught endwise between the serrations of the two surfaces, and this end pressure on the grain readily (it is stated) brings off the husk. The grain is fed from a hopper, and having been shelled is carried forward into the cleaning section by the intermediate spiral vane. The annular space is more contracted on one side than the other, the axis of the shell and burr at this end of the apparatus being relatively eccentric. The surfaces respectively of the shell and burr are each indented aslant and relatively in opposite directions, so that by the combined effect of the indents, the irregular space between the operating surfaces, and the rough detached husks, there is, whilst the shell and burr revolve in opposite directions, a constant displacement and friction taking place amongst the grains, and by this means the inner coating or skin is (it is stated) entirely removed.

[Printed, 8d. Drawing.]

A.D. 1857, May 1.—No. 1228.

BARTEAU, PIERRE ALEXANDRE, GUY, GABRIEL, and CORROY, CHARLES.—(*Provisional protection only.*)

This invention relates to the manufacture, for millstones, and for building and other purposes, of artificial stone, which



is made from slag, bricks, rabble and other hard substances, broken small and cemented together by a compound produced by mixing whilst in a dry state, 20 parts of hydraulic lime, 30 parts of Roman cement, 10 parts of oxide of iron or of iron filings, and 40 parts of rough broken plaster. When mixed together the mass is to be worked up with water to the consistency of mortar, in which the broken substances above-named are imbedded in moulds calculated to produce an artificial stone of the desired form. When a mould is filled, it is dressed off or faced by means of a wooden blade. In a few minutes the contents of the mould set together and become a solid mass of artificial stone, suitable for mill-stones and other uses. The moulds are made in parts, which are held together by wedges capable of removal when the parts of the mould require dismounting in order to discharge its contents.

A stone adapted for use under water or under ground, may be made from the cement or compound alone, without the addition of the broken substances.

Another "good artificial stone" suitable for all purposes above ground may be produced by mixing the broken material with a cement composed of 10 parts of unslacked hydraulic lime, 24 parts of Roman cement, and 966 of dry plaster.

[Printed, 6d. Drawing.]

A.D. 1857, May 15.—No. 1374.

WALKER, ROBERT PORTER.—"Machinery for hulling and "scouring coffee or similar substances." For this purpose the inventor employs two cylinders respectively covered with wire netting, and mounted horizontally one within the other on the same axis, which rests in bearings supported by an appropriate frame. The form of the inner cylinder is polygonal with closed ends, and it has attached to its sides a series of beaters, each comprising a small inclining frame with a metal plate attached. These plates are perforated in a manner to impart to them a roughened or rasping surface, and in addition to the beaters, the inner cylinder is furnished with a number of "flights," which according to the angle at which they are set, accelerate or retard the progress of the coffee, which enters the annular space between the cylinders from a hopper at one end of the apparatus, and is operated upon by

the beaters whilst passing through. The inner cylinder is fixed on the axis, which passes loosely through the ends of the outer cylinder, so that the two can be driven in opposite directions by means of separate driving bands. The apparatus is inclosed by an outer casing, into which the dust and particles find their way through the wirework of the outer cylinder and are carried off by the blast of a fan.

[Printed, *sd.* Drawing.]

A.D. 1857, May 18.—No. 1395.

AVERY, JOHN.—(*A communication from Joseph Perrigault.*)—(*Provisional protection only.*)

The object of this invention relating to the construction of apparatus applicable to mills employed in the process of grinding corn and similar substances, is to prevent, by its coming into contact with cool surfaces, the sudden condensation of the aqueous vapour which is generated by the friction and emitted by the newly ground meal as it issues from between the grinding surfaces; and also its combination with the stive or dirt. This is effected by conducting the vapour as it issues from the casing of the mill into a chamber, where it mingles with heated air, and is thence carried through channels into a second receiving chamber, where the stive is exhausted by a fan, and the flour is collected through an opening above. The chambers are respectively inclosed by outer casings, and the space between may be heated.

[Printed, *cd.* Drawings.]

A.D. 1857, May 20.—No. 1413.

HARDLEY, JOHN.—This invention relates to the construction of apparatus (stated to be) particularly applicable to the bruising and grinding of vegetable substances, such as gorse, grain, or pulse. The operation is effected by means of a drum or cylinder, having its periphery cut or cast in serrated furrows, and being horizontally mounted upon a suitable frame so as to revolve on its axis partly within a fixed semi-cylindrical drum or what is termed a "concave," which incloses one half portion of the circumference of the cylinder. The inner surface of this concave is furrowed in a manner somewhat similar in form, but inclining to the axis of the cylinder, the furrows of which are made straight and parallel therewith. The gorse or other substance to be operated upon, is fed on to the furrowed sur-

face of the cylinder at top and carried (as the latter revolves) between it and the inner or furrowed surface of the concave, and whilst passing through, is cut, bruised, and ground, and ultimately falls from the lower part of the concave in a finely divided state. By means of set screws, the distance apart of the surfaces respectively of the cylinder and the concave, may be regulated, so that the particles to which the substance is reduced may be left coarse, or by setting the surfaces closer together, may be ground to the degree of fineness required.

[Printed, 6d. Drawing.]

A.D. 1857, June 2.—No. 1553.

BENTLEY, NEWTON, and ALCOCK, JOHN.—This invention relates to the construction of machinery or apparatus adapted primarily to the forging and stamping of metal but also applicable to various other purposes, amongst which is mentioned the crushing of seeds. The inventors say, "We attach one or  
 " more hammers, stamps, or fallers each to a vertical bar or  
 " slide, which rises and falls in suitable frames or bearings.  
 " On this vertical sliding bar we fix a stud or pivot, with or  
 " without an antifriction pulley, which being acted upon by  
 " an intermittent spiral cam placed on a vertical shaft, causes  
 " the said hammer, stamp, or faller to rise and fall at any  
 " required distance; or we place the cam itself upon vertical  
 " bar or shaft, at the lower end of which is the hammer or  
 " stamp, both rising and falling together. The spiral inter-  
 " mittent cam is formed by having upon a cylinder, shaft, or  
 " disc one or more spiral projections, either internally or  
 " externally extending only over a part of its circumference,  
 " leaving a space or spaces between each terminus of the pro-  
 " jection. The said cam may be raised or lowered on the  
 " vertical shaft, and fixed in any desired position, for the pur-  
 " pose of adjusting the length of lift or stroke; or the position  
 " of the stud on the bar or shaft may be regulated for the same  
 " purpose. When the stud or pulley is at the commencement  
 " of the spiral projection the lift is the greatest, giving the  
 " heaviest blow; but when near the other terminus the lift is  
 " the least, giving the lightest blow. The space or spaces in  
 " the cam or spiral projection permit the falling of the  
 " hammer, stamp, or faller."



Modifications chiefly relating to contrivances which raise the hammers or crushers, and to modes of adapting the spiral cam, are described and exhibited.

[Printed, 10*d*. Drawing.]

A.D. 1857, June 27.—No. 1808.

LIGER, PIERRE EUGÈNE.—(*Provisional protection only.*)—This invention relating to the construction and working of grinding mills, refers to the means employed for supporting and readily adjusting the running stone, in order that it may maintain its equilibrium during the time of working, and thereby render the grinding action more equable, and reduce the power required to drive the stone to a minimum. To this end the inventor says: "I fit a metal hoop within the eye of the running stone, which is furnished with two bearings placed diametrically opposite to each other, which receive the ends of a cross bar or rynd, on which the stone is pivoted. The cross bar is embraced in the middle of its length by the driving clutch fitted to the top of the driving shaft. Under the cross bar, and between that and the top of the driving shaft, a cushion or pad is placed; this receives the centre pivot of the shaft on which the stone rests. This centre pad is adjustable by means of set screws in the direction of the length of the cross piece, for the purpose of adjusting the equilibrium of the stone in that direction, while the bearings supporting the pivots of the cross bar are also adjustable by means of set screws, whereby the stone may be balanced in the opposite or cross direction to that before mentioned."

[Printed, 4*d*. No Drawings.]

A.D. 1857, June 29.—No. 1815.

NYE, SAMUEL.—This invention relating to the construction of hand-mills adapted to the grinding of coffee, pepper, spice and other substances, refers to the form of the grinding surfaces, and to a mode of fixing the mill to a bench or other stationary article by means of a cramp and thumb screw. The grinder shaped to the form of a cone, has its external surface cut or furnished with serrated grooves; and it is concentrically fitted and caused to revolve on its axis within a conical chamber similarly grooved internally, by means of a crank handle adapted to one end of its axis. A screw passing through the

center of the stand is capable of setting the mill either to grind coarse or fine as required, and the claws of the cramp when the cramp screw is turned, engage with parts projecting at the base of the stand, and steadily maintain the mill in a fixed position, so long as is required.

[Printed, 8d. Drawing.]

A.D. 1857, June 29.—No. 1822.

BUCHHOLZ, GUSTAV ADOLPH.—This invention relating to the construction of machinery designed for hulling or cleaning rice and other grain, refers chiefly to the rubbing surfaces, which are formed on conical stones mounted on vertical axes, and rotating respectively and concentrically in conical cases, which inclose the stones, there being between each stone and case sufficient space left for the descent of the rice, which is fed from a hopper above. The rubbing surface on each conical stone is formed by a series of annular furrows, and as the rice descends in the annular space between the stone and the case, it passes in succession from furrow to furrow, and is eventually discharged at the bottom of the apparatus into another machine of similar construction, and in this way several machines are made to operate upon the same rice in succession, such machines by preference being arranged or circumposed at suitable levels, each one lower than the preceding, round a common center, so that the mode of actuating all simultaneously is simplified.

When operating upon wheat, oscillating sieves to catch the grain and separate the bran are so disposed between each machine, that the grain as it passes from them in succession, falls upon the sieves and thence into the next machine, and so on to the last which finishes the operation.

[Printed, 10d. Drawings.]

A.D. 1857, June 30.—No. 1826.

CLÖET, ISIDORE CHARLES.—The invention relates to the construction of a mill designed for removing the husks from rice or barley which (it is stated) is less liable to be broken or injured in the process by this mill, than by other mills in ordinary use. The mill is self-acting and requires no personal *attention to the feeding of the grain, which as also the discharge, is regulated by valves capable of adjustment as to the*



quantity which is allowed to pass through the apparatus in a given time. The operating parts of the mill consist of a large stone mounted on a horizontal axis to revolve concentrically within a case, which also revolves but at a much slower speed than the stone and in the opposite direction. The rice or barley passes into the narrow space between the stone and case through the hollow trunnion of the latter; one end of the axis of the stone also passes through the center of the trunnion and finds a bearing on the framework beyond. The hopper valves have an alternating movement imparted to them by a cam, and the discharge valve is moved by a similar contrivance. The mill is actuated by steam or power communicated by straps running round pulleys, viz., a small pulley fixed on the axis of the stone, and a large pulley on the trunnion of the case. The grain descends through a spout from the apartment above, and is admitted by the valves in quantity regulated in relation to the time it is required to remain under the action of the stone.

[Printed, 10d. Drawing.]

A.D. 1857, July 4.—No. 1866.

HENRY, MICHAEL.—(*A communication from Messrs. Owin and Dugué.*)—(*Provisional protection only.*)

This invention relates to the construction of a machine designed for cleaning and crushing grain. The first operation of the machine breaks the germ and husk of the grain by the action of a feed roller, whence the grain passes on to a series of two or more inclining sieves or riddles, to which is imparted by the mechanism a shaking or oscillating to-and-fro movement, that separates the foreign matters and impurities, and also the husk and germ, and thence when so divested, the clean grain is conducted to crushing rollers, which reduce it to meal. The separation of the germ may be facilitated by a winnowing fan. The grain comes down a shoot to the feed rollers, and passes thence with the broken germ and husks on to the upper sieve, which detains stones and impurities, the grain and germ passing through to the next sieve, which allows the germ to pass through but detains the grain. As the grain falls off the lowest edge of this sieve, it is conducted to the crushing rollers, its passage being intercepted by adjustable feed plates, worked by regulating screws. The invention is not confined to the use of any special number of sieves.

[Printed, 4d. No Drawings.]

A.D. 1857, July 4.—No. 1870.

SMITH, JOHN.—This invention relating to the constructional details of flour dressing machines, refers more particularly to the gear wheels, by which the cylinder is caused to rotate on its axis, and which have been made in two parts; also to the mode of applying the brushes which clear the cylinder externally.

When (it is stated) the gear wheels are made in two parts capable of separation, they do not always come together again at the junctions of the rim with that degree of correctness necessary to maintain the true pitch of the cogs, and to obviate this, the wheels are made whole and have an annular flange cast projecting from one side, to which the two halves of the cylinder are secured by means of screw bolts or other suitable contrivance. The wheels are supported by the framing, so that both parts of the cylinder may when necessary be removed and replaced without dismounting them.

In order that the brushes which cleanse the outside of the cylinder may press uniformly on its surface, although it may be uneven, they are attached to pendent arms which swing on stationary pivots so fixed, that the arms incline from a vertical line radiating from the axis of the cylinder; by this means the brushes always remain in contact with the cylinder, and accommodate themselves to all the inequalities of its surface; the constant pressure of the brushes is made uniform, and its amount is regulated by a lever and weight.

[Printed, 10d. Drawing.]

A.D. 1857, August 20.—No. 2216.

MESSMORE, DANIEL.—(*A communication.*)—(*Provisional protection only.*)—The object of this invention relating to the dressing of the millstones employed in the process of hulling rice and other grain, is so to form the furrows that the grain may clear itself readily and not be confined to the eye or the central part of the stones, and when it does leave the eye, it may not be caused to pass between the grinding surfaces centrifugally at too rapid a rate. These results (as described by the inventor) are effected by the peculiar shape of the furrows, viz., "On the surface of the bed stone are formed at equal distances apart four semicircular furrows or grooves, the end of each of which springs from the eye of the stone, and terminates on a radius struck from the center of the stone situated at

“about right angles to the radius at which the curved groove or channel commences at the eye of the stone. From the outer end of each semicircular furrow or groove there is formed a straight radial groove, which terminates at the periphery of the stone. From each of the radial grooves four parallel curved grooves are made, which are struck from four points external of the periphery, and they incline outwards. Three of these parallel grooves terminate at the periphery of the stone, the fourth terminates near the next radial groove. On the surface of the runner stone are formed four similar semicircular grooves, but wider than those of the bed stone, and from near the outer end of each such semicircular groove is formed a curved groove, which commences near the end of the semicircular groove, and terminates at the periphery.”

[Printed, 4d. No Drawings.]

A.D. 1857, August 26.—No. 2264.

WEBB, JOHN.—(*Provisional protection only*).—The object of this invention relating to crushing machines, is to be able to crush two kinds of grain simultaneously in one machine which contains a double set of crushing rollers and apparatus, one designed for crushing oats, and the other for splitting beans, which after the operation are conveyed respectively through separate spouts into suitable receptacles. There is only one feeding hopper which is divided by removable partitions called boards. This crushing mill is worked by manual labour.

[Printed, 6d. Drawing.]

A.D. 1857, September 12.—No. 2377.

CLÔET, ISIDORE CHARLES.—This is an invention of apparatus designed for hulling and otherwise cleaning and dressing rice, and an apparatus for steaming or glazing rice with a view to improve its condition and appearance, render it better for keeping, and increase its commercial value.

1st. The hulling and dressing apparatus, comprises two hemispherical shaped mortars with vertical stampers or pestles. Upon the upper rim of each mortar is fixed an upright wooden cylinder, and in the top of each cylinder is fitted a conical hopper and feeding valve. Level with the rim of each mortar is a horizontal stirrer frame, which is furnished



with teeth, and is caused to move rapidly to-and-fro crosswise in the mortar by a shaft, which actuates both the stirring frames, whilst the pestles move rapidly up and down. The inside surface of each mortar is furnished with a close series of annular serrated grooves inclining downwards, and at every stroke of the pestles the rice is displaced and forced up all round the sides of the mortars against the sharp edges of the grooves, and by these combined means it is subjected to compound trituration. The feeding and discharging appliances are self-acting and the whole apparatus is actuated by motive power. Passing through discharge valves at the bottom of the mortars, the hulled rice is conducted into a coniform cylinder or brushing machine furnished with curvilinear revolving brushes, and there is a lifting apparatus for raising the rice to the height required.

2nd. The apparatus for steaming or glazing the rice, consists of a steaming hopper or vessel containing a cone of wire gauze or other suitable perforated material, upon which the rice falls and is spread in all directions whilst passing through the steam, which is admitted to the hopper by a suitable pipe. After the process the glazed rice descends a shoot into a bag placed upon the table of a weighing machine.

[Printed, 2s. 10d. Drawings.]

A.D. 1857, November 5.—No. 2809.

ROBINSON, GEORGE. — (*Provisional protection only.*) — This invention relating to the construction of apparatus designed for shelling or hulling coffee and other berries and seeds consists, as described by the inventor, “in the application  
“ of a rotary beater revolving within a cylinder of woven  
“ wire or other reticulated material, in which the berries or  
“ seed are so acted on as to separate the hull or shell there-  
“ from. For this purpose I prefer to place the axis of the  
“ beater horizontal, and employ a number of beaters supported  
“ on arms from the axis in a position parallel to the cylindrical  
“ part, and in more or less close proximity thereto, according to  
“ the berries or seed to be operated upon. The berries or  
“ seeds are fed in along the upper part of the cylinder, and  
“ escape near the lower part, and during the descent through  
“ the cylinder are acted on by rapid rotary motion commu-  
“ nicated to the beater.”

“The beaters may consist of wood, metal, stone, or other material as may be found best adapted for the purpose. The construction of the cylinder or partial cylinder may also be varied according to circumstances.”

[Printed, 4d. No Drawings.]

A.D. 1857, December 17.—No. 3106.

JOHNSON, JOHN HENRY.—(*A communication from Charles Theodore Laborey.*)—(*Provisional protection only.*)—Machinery for hulling cotton and other oleaginous seeds, and applicable for hulling cereals. The apparatus employed to effect the first part of the process consists of a cylinder covered with wire gauze or roughened plates, and containing stiff rotating brushes. The seeds are fed into the cylinder either from a hopper or direct from a smut machine, which has previously cleaned off all large extraneous matter. When cotton seed is operated upon, it is rubbed in contact with the internal rough surface of the cylinder by the action of the brushes, which have the effect of removing the fibres, and a portion of the hull or outer skin, and these are separated from the grain by a fan, the grain falling down a shoot into a second machine or cylinder covered with longitudinally roughened or file-cut plates, and having within it, mounted concentrically to rotate at a high speed, a smaller cylinder covered with plates cut or roughened externally also in the direction of its length, suitable openings between the plates being left for the seed and husks to fall through. The seed is supplied in regulated quantity by a feeding apparatus into the annular space between the cylinders, and whilst passing through is subjected to the abrasion of the roughened surfaces of the cylinders. When the seed under process is of a hard nature, rollers adapted to the feeding apparatus may be employed to slightly bruise it before it enters the hulling cylinders. The hulled kernels when separated from the hulls by a screen, are then ready for the oil mill.

[Printed, 4d. No Drawings.]

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## 1858.

A.D. 1858, January 19.—No. 84.

WALLER, WILLIAM.—This invention relates to the construction of metallic surfaces applicable to various purposes, such



as grinding, crushing, cutting, breaking, splitting, bruising, &c. These surfaces consist of a close series of corrugations or of annular grooves, and may be formed either on the circumference of a cylinder, the periphery of a broad wheel, or the side flat surface of a disc, according to the construction of the machine or the particular use to which it is applied; and although in many cases the serrations, grooves, or corrugations may be formed like teeth aslant or across the periphery of a broad wheel, these surfaces are not intended to be used alone for the purposes to which tooth gearing wheels are usually applied, viz., transmitting power but in combination with the above and similar processes, and also the cutting or severing of hay, chaff, gorse, and similar substances.

[Printed, 8d. Drawing.]

A.D. 1858, January 21.—No. 113.

**BROWN, JOHN STAITE.**—This invention relates to the combination of metal and stone in the construction of the grinding surfaces of mills, with a view to render them more effective and durable.

1st. The central part of the grinding surface of both the upper and the lower stone, is formed of metal suitably grooved or roughened, and circumscribed in segmental sections around the metallic centers, are fitted ordinary French buhrs or other suitable stone, openings being left between the metal and the stone sections respectively, to admit air for the purpose of cooling the grinding surfaces. The central metal surface of each stone is by means of screws made adjustable in the frame which holds the parts together.

2nd. Forming the metallic portion of the grinding surfaces of mills, in sections composed of thin plates of steel with bevelled or cutting edges which are set uppermost. These steel plates are secured in sets, there being between each plate an intermediate packing. These packings do not stand so high as the plates, in order that their top edges may be below the grinding surface and so form a series of furrows, similar to the furrows of ordinary stones.

In operating with mill-stones constructed according to the invention, the breaking up and rough grinding is done by the metal surfaces, and the fine or finishing part of the process by the stone.

[Printed, 10d. Drawing.]

A.D. 1858, February 3.—No. 201.

LONGLEY, WILLIAM.—(*Provisional protection only.*)

This invention relates to a peculiar form and arrangement of the grinding surface of the running stones of mills adapted to splitting beans and peas, coarse grinding barley, etc., and to the means devised for feeding the grain. The inventor says, "in ordinary mill stones the cutting surfaces extend from the eye to the periphery and the grain when introduced is operated on over the whole extent of surface, whereas according to my invention I remove a portion of the face of the runner, and sink it considerably below the level of the cutting surface so that it presents a cutting surface of an annular form near the periphery. The furrows of the cutting surface I prefer to dispose in a radial position, leaving a land or surface of about one inch and a half between furrows of about the same breadth, inclined to a depth of about three-eighths of an inch below the face. In order to deliver the grain at once to the cutting surfaces, I place a disc on the spindle of the stone immediately below the eye of the runner on which the grain falls when it enters the eye. The centrifugal force produced by the rotary motion of the plate at once throws the grain towards the periphery of the stones between the cutting surfaces of which it enters and passes off at the periphery as usual. From this it will readily be understood that the grain remains a very short time between the stones, and as it passes freely through, enabling the performance of a large amount of work with one pair of stones."

[Printed, 4d. No Drawings.]

A.D. 1858, February 11.—No. 259.

JOHNSON, CHARLES, and JOHNSON, GEORGE.—This is an invention of a portable steam engine or "propeller," designed for actuating or for drawing either continuously or intermittently a variety of tilling implements some of which are mounted on a carrier frame that moves on wheels and is drawn by the engine, and others are attached to the frame of the latter which is also employed as a stationary engine for actuating

pulping, crushing, and grinding apparatus by means of chains or bands, the chief novelty consisting in the form of the grooves in the wheels which transmit the power of the engine. These grooves instead of being straight or in a direct line round the wheels, are waved or curvilinear.

[Printed, 1s. Drawing.]

A.D. 1858, March 1.—No. 398.

MILLS, THOMAS.—(*Provisional protection only.*)—This invention relates to the construction of apparatus designed for dressing grain or meal which has passed through the grinding process. The drum or cylinder, to the periphery of which brushes are attached in the usual way, is of considerable length, and is placed upright on a vertical spindle or axis. This cylinder revolves within a cylindrical casing of wire gauze, divided into sections of different degrees of fineness, and its upper end is closed by a plate or disc, whereon the ground meal falls as it is fed into the top of the machine, and thence is thrown off centrifugally by the revolving cylinder against the wire casing, and thus is brought under the action of the brushes as they sweep round with the cylinder. The fine flour is first brushed through the upper or finest section of the gauze into an external annular chamber, whence by means of a shoot it is conveyed to a proper receptacle, there being a separate annular chamber surrounding each section of the wire gauze, to receive the different qualities of flour, the pollard, and sharps, the bran and coarser particles which will not pass through the coarsest section of wire gauze, finally falling from the bottom of the casing into a receptacle beneath.

These vertical dressing machines may be worked in combination with a horizontal or inclined silk dresser or apparatus, which first takes out of the meal the finest flour, and then the residue is reground by a pair of millstones carried upon the spindle of the vertical dressing cylinder, which receives the meal as it falls from the stones.

[Printed, 4d. No Drawings.]

A.D. 1858, March 1.—No. 405.

NEWTON, WILLIAM EDWARD. — (*A communication.*) — This invention relates to the preparatory treatment of maize or



Indian corn, previous to its being ground into flour. In the ordinary treatment of maize it is either dried naturally by exposure to the sun and air, or artificially in an oven, and when dry it is afterwards ground.

The inventor has discovered that the seed or germ, the greasy part, and the black husk which covers it, are those parts of the maize which if not separated from the flour are detrimental to the appearance of bread made therefrom, and to its nutritive quality.

"Before submitting the Indian corn to the mill it is first steeped in cold water for some hours, then after having been drained, brushed, and cleaned, it is submitted to the action of horizontal stones dressed according to the system of the inventor, by simple cuts or lines proceeding from the centre to the circumference, and having no rays or secondary lines. The decortication having been completed, the ground product is passed into a rotary sifting or bolting machine, which separates the grain of different sizes, the flour obtained, the greasy part, the seed or germ, and the black husk, as well as the bran. The flour produced is left in the drying room to extract all the dampness, its torrefication being carefully avoided, and after this drying process the flour can be sent into the market."

"The cleansing of the grain is effected by sifting ventilators, and it is again passed through the mill. These operations of passing through millstones, fans, and mechanical bolters must be done in the proper order and as many times as is considered necessary for the beauty and fineness of the product."

[Printed, 4d. No Drawings.]

A.D. 1858, March 18.—No. 555.

DUNLOP, ANDREW, and STARK, ALEXANDER.—This invention, relating to the process of dressing or sifting flour or meal, is in some respects supplementary to a former invention for which Letters Patent were granted to the above Andrew Dunlop bearing date October 6, 1856, No. 2335.

According to the present invention, the process is effected by an energetic up-and-down movement of the frame to which the silk bolting cloth is attached. The position of the frame

inclines slightly from the horizontal, one end being somewhat raised in order that as the process proceeds the coarser particles of the meal which is fed on to the upper end, and tossed up at every movement of the frame, may find their way gradually towards the lower extremity, whilst the fine flour by means of the rapid up-and-down motion of the frame, is by the constant shaking and tossing up, caused to pass through the fine interstices of the bolting cloth, and falls into a receptacle beneath, the coarser particles which cannot pass through the cloth being shook gradually towards and over the lower end of the frame into a separate receptacle. Instead of silk the dressing cloth may be made of any other suitable material. According to one arrangement the dressing cloth is tacked or otherwise fastened to strips of wood, which are screwed to the frame in a manner to keep the cloth evenly extended. The rapid up-and-down motion of the frame may be obtained from a crank or eccentric, and by other additional mechanical contrivances the frame may be made to oscillate.

[Printed, &c. Drawing.]

A.D. 1858, April 8.—No. 753.

RICHMOND, EDWARD. — (*A communication from Thomas Blanchard.*)—The object of this invention is to effect the crushing or reduction of grain, sugar cane, tobacco, and other substances not by the ordinary method of crushing and grinding by means of the usual appliances, such as millstones, but by the combined shearing action of two series of rotating discs, whereby (it is stated) better results are obtained as to both the quality and quantity of the product in relation to the amount of power employed. The discs of each series are mounted with packings between them on separate shafts which are disposed a certain distance apart in parallel position relatively, so that a portion of the discs on one shaft interlock or enter the spaces between the discs on the other shaft, and vice versa, the shafts being geared to rotate in opposite directions with equal velocity, and clearers being interposed between the discs for the purpose of removing all particles of the ground or sheared substance which may lodge between.

The invention further consists in combining the compound *shearing discs* and clearers with crushing rollers and an



endless apron or other contrivance for removing the crushed material after the operation in the direction required. Also combining an endless apron and one or more sets of compound shearing apparatus with bolting or sifting mechanism.

[Printed, 10d. Drawing.]

A.D. 1858, April 9.—No. 763.

AGER, WILSON.—This invention relates to the process of cleaning off the inner pellicle of the grain of rice, and to the mechanism employed. The machine, which acts upon the rice after it has been hulled and its pellicle loosened by any of the ordinary processes, consists of a casing of net work having the shape or form of the frustum of a cone. Inside this casing attached to a central vertical shaft that is set in motion by bevel wheels is what is called a rubber, which has the form of the casing, but is separated into two parts or sections, the lower part being fixed to the shaft and clothed with sheepskin, and the upper part is furnished with brushes, which project across the conical space formed between the rubber and the casing, and rub against the latter as the rubber revolves. The upper section of the rubber is adjustable on the shaft as to height, in order that as the sheepskin wears, the shaft may be raised and the brushes lowered, so that a uniform pressure of the brushes and sheepskin against the casing may be constantly maintained. The rice is fed in at the top of the apparatus, and is first cleansed by the brushes which clean out the cavity of the germ, and it is afterwards polished as it descends in the apparatus by the rubbing action of the sheepskin against the casing.

[Printed, 6d. Drawing.]

A.D. 1858, May 18.—No. 1108.

BROCHAND, ERNEST CIPRIEN.—This is an invention of a portable grinding mill, with bolter and bran box, which are mounted together on a suitable carriage for travelling by horse draught from place to place, and for being worked by horse power when the carriage is stationary, the horse then walking round it harnessed to the free end of a pole or bar, the other

end of which is fastened in a socket fixed on the top of the vertical driving shaft. The master furrows in the millstones are projected tangently from the eye in curved lines, and the secondary furrows projected from the master furrows are also curved, but all the curved furrows run into straight furrows as they approach the periphery of the stones.

“To prevent jerks, shocks, or drags being communicated to the mill work when the horse starts or changes pace, &c., motion is transmitted from the driving shaft to the driving or main wheel (which actuates the millstone through suitable connections) by means of a pressing or friction plate, wheel, or cone, mounted on the shaft and so adjusted as to press on the main wheel just sufficiently to drive it (regulated according to the normal resistance to be overcome) while it will only slide on its surface without moving it, in case of shocks, jerks, etc. This friction plate is so mounted that it may rise and fall on the shaft while turning with it, it may lie flat on the main wheel, or fit into it by feather and groove or other adjustment.”

Instead of horse power, the mill may be readily adapted for working by steam or other motor.

[Printed, 10d. Drawing.]

A.D. 1858, July 20.—No. 1640.

NICHOLSON, WILLIAM NEWZAM.—The object of this invention is to drive the rollers of crushing machines without the direct aid of the long-toothed wheels which are usually employed and fixed on their axes in gear with each other, the objection to the use of wheels with long teeth being that according to the adjustment or required separation of the rollers, more or less apart, to suit the crushing to be done, whether coarse or fine, the wheels have necessarily to work more or less out of gear, and the consequence is a constant departure from the true pitch line of the teeth. The invention, as described by the inventor, consists, first, in driving the movable or adjustable roller of crushing mills by means of a pinion working into cogs formed on the internal edge of an annular wheel mounted on the axle of the roller; secondly, in supporting the bush of the movable roller in a slot of such form that the roller as it moves may describe an arc of a circle about the centre of the driving pinion, also for varying the dis-

" tance between the rollers, I use an iron slide, in which the  
" bush of the movable roller is fixed, with a circular hole to  
" receive a flanged eccentric, and in holding the eccentric in  
" the required position, I use a notched disc, into the notches  
" of which a catch drops for the purpose. When the mill has  
" two pairs of rollers I connect the two bottom rollers by spur  
" or other wheels in the usual manner, but adopt a similar  
" slide and eccentric, which I arrange in such manner that  
" one of the rollers may be thrown out of work when it is not  
" wished to crush with the lower pair."

[Printed, &c. Drawing.]

A.D. 1858, July 23.—No. 1661.

WALKER, ROBERT PORTER.—This is an invention of apparatus designed for the process of "hulling and finishing rice  
" and similar grains." It is stated that in many kinds of  
grain and seeds "the hull is so firmly attached to the berry  
" that the rubbing necessary to remove the same breaks a  
" large portion of the grains, involving considerable loss.  
" With rice the hull requires to be slid off endways, as in that  
" manner the grain is less injured, and the hull removed with  
" greater ease."

The inventor says, "having arrived by experiment at the  
" conclusion above stated particularly in regard to rice, it  
" has been my object in the present invention to accomplish  
" by machinery the operation above stated, and for this purpose I supply a thin flat stream of rice on to a cylinder  
" covered with emery, and cause the same to pass beneath  
" elastic rollers (I prefer india-rubber), whose surfaces travel  
" at a slightly different speed to the main cylinder, to cause  
" a rolling and rubbing motion between the cylinder and its  
" rollers; and to said rollers I impart simultaneously an end-  
" ways motion, which slips the hulls endways off the rice,  
" ensuring a proper hulling, with very little waste from  
" broken berries. From the hulling part of the machine the  
" grains and hulls may pass to a winnower, and thence to the  
" pearler or finisher."

The apparatus employed for finishing or "pearling" the  
rice after the hulling process, for the purpose of removing the  
" douse and chit" or the outer glutinous coating which lies  
beneath the hull, and also the germ or sprouting point of the



berry, consists of a cylinder coated with emery externally, and a surrounding casing coated with emery internally, and revolving one within the other in opposite directions, and acting in connection with sheepskin rubbers and screens respectively to abrade and separate the douse and chit, and deliver the rice entirely cleaned without heating or injured otherwise, and ready for market.

[Printed, 8d. Drawing.]

A.D. 1858, August 12.—No. 1844.

JOBSON, ROBERT.—This invention relates to the construction of apparatus for crushing and sifting, and consists of a large rotating cylindrical shell or sieve, constructed with circular ends held in position by longitudinal bars, to which the several sections of wire gauze or reticulated material which covers the cylinder, are fixed in a way that they may be changed when required. This cylindrical sieve does not revolve on an axis, but is supported by three rollers at each end, and is rotated by a pinion that engages with an annular rack attached to one of its circular ends. The crushing rollers are disposed lengthwise inside the cylindrical sieve, their axes finding bearings in the side frames, which carry the axes of the rollers on which the sieve rotates. A hopper is placed over the crushing rollers also inside the sieve, to which, projecting at a suitable angle inwards, is affixed a shelf that as the sieve revolves, carries up those portions of the crushed substance which will not pass through the sieve, and delivers them again into the hopper to be re-crushed.

“When desired, the crushing rollers are arranged in a suitable manner to be heated.”

[Printed, 6d. Drawing.]

A.D. 1858, August 23.—No. 1915.

AVERILL, THOMAS.—(*A communication.*)—This is an invention of a grinding mill which operates by means of a series of plates, both surfaces whereof are furnished with serrated furrows slanting downwards from an opening made through each plate at the mid-length near the top, each furrow becoming more shallow towards the lower end. These plates are slightly feather-edged towards the top, and are disposed on edge side

by side within a suitable case. The grinding mill described and illustrated contains five plates, three of which, viz., the center and the two side plates are stationary, and the intermediate plates on each side of the center plate, are moved to and fro reciprocatingly by a crank. The precise distance apart of the grinding surfaces of the plates is regulated, and in addition to the longitudinal reciprocating motion of the two plates, they are caused to rise slightly whilst moving in each direction by means of a curved guiding slot formed on their upper edges. When the plates are in position side by side, the openings through them form a chamber, into which the substance to be ground finds its way from a hopper above, and the lower side of the opening in those plates which are stationary, is formed with teeth, which cut up and reduce the substances to the requisite size for entering the furrows.

[Printed, &c. Drawing.]

A.D. 1858, September 4.—No. 2004.

LAVIE, RÉNE PROSPER.—(*Provisional protection only.*)—The object of this invention relating to the constructional details of mills, consist in :—

1st. "The particular means employed for regulating and maintaining the running stone upon its pivot."

2nd. "The arrangement and use of the rhynd of the stone spindle as a breaker."

3rd. "The arrangements of certain parts of the rhynd and its cover, which are furnished with an upper and lower stone of small size, forming the breaker."

4th. "The use of a cylinder for supplying the corn to the breaker."

5th. The use of a conical helical sifter for separating the middlings."

6th. "The use of stones, either small or large, placed one upon the other horizontally, and directly or indirectly worked."

"In mills with small horizontal stones, the running stone, owing to its lightness, does not usually exert a sufficient pressure on the corn, and is liable to rise. To remedy this defect . . . at the upper end of the stone spindle a rhynd is fixed by means of screws or otherwise, the same having a lateral aperture traversed by a cross piece which rests upon



“ a pivot, and has upon its upper surface a spherical protuberance, against which the end of a screw passing through the cover of the rhynd presses.”

The advantages derivable from the use of the above system are enumerated.

[Printed, 4d. No Drawings.]

A.D. 1858, September 13.—No. 2076.

FROST, ROBERT and RIGG, ARTHUR.—This is an invention of apparatus designed for the process of cleaning grain or seeds, and bran, for which purpose the screen or riddle of the machine employed “ is made of a corrugated form, and the grain or seed is caused to meet a blast of air in an upright or vertical spout or passage. The direction or action of the air blast is governed as it enters the upright or vertical spout or passage by louvre boards, and the quantity of air admitted to the fan or blower is regulated by means of flap doors over the inlet openings; these doors are controlled in their action by balance weights or apparatus, so that, by the combined action of the air and the apparatus applied to the doors, the admission of air is regulated; the grain or seed is equally distributed to the blast by means of a fluted roller. The inner coating of flour is removed from bran by metallic scourers roughened in the manner of an ordinary grater, and is formed on a flat surface.”

Glass through which the action of the blast can be observed, may be used in the sides of the passage through which the grain and other substances pass.

“ In constructing apparatus for cleaning bran two circular blocks of wood are used, by preference about three feet six inches diameter; these two blocks of wood are faced with metal plates, or discs of sheet metal, which are rendered rough by being punctured with numerous holes in the manner in which graters are made. One such disc is fixed to the working surface of one of the blocks, and another of such plates is fixed to the working surface of the other block in such manner that their projecting or rough points are towards each other. And these two circular or cylindrical blocks are mounted and worked like millstones, and the bran is fed through the eye of one of them.”

[Printed, 10d. Drawings.]

A.D. 1858, September 29.—No. 2169.

**MANNING, JOHN and PAUL, THOMAS.**—This invention entitled “an improved stone staff to be used in dressing mill-stones,” is intended to supersede the common straight edge or stone staff in ordinary use, which is nothing more than a rectangular piece of wood about four feet long, with one of its surfaces planed true and dressed with a coloring substance.

The improved staff (as described) “is supported upon two metal discs, which rest one upon another, the surfaces in contact of the discs being made perfectly true. The upper disc carries the staff itself, with which it is made to revolve so as to pass over the whole surface of the millstone in a true plane. It is therefore impossible that the face of the staff can touch, and consequently it cannot mark any other than the highest place on the millstone. These places when indicated by the staff, are afterwards removed with the ‘stone bill’ in the ordinary way, and the process of marking and removing the projecting places is repeated, until the whole surface is made perfectly true.”

“A stone staff constructed upon the same principle may also be adopted for staffing conical millstones, whether concave or convex, as the discs and staff can be made to any required angle. The use of stone staffs of this construction will remove one great obstacle to the use of conical millstones, the difficulty of keeping the faces of such stones properly dressed so as to coincide with each other, having hitherto been very great, but by using the improved staff the operation will be perfectly simple.”

[Printed, 6d. Drawing.]

A.D. 1858, November 3.—No. 2453.

**BLUMBERG, VICTOR.**—The object of this invention is to cover or veneer wood with slate, so as to render the combination of the two substances available for the construction of many articles, which might advantageously be made of slate, but have not been hitherto on account of its great weight.

These combined substances may be advantageously used for folding billiard tables, and those for export where the weight of solid slate is objectionable; also for flooring halls, churches, and other places where stone or other pavement is usually laid. It is also applicable in chemical works, where the floors, walls, and ceilings may be covered or protected in the same way.

Slabs or framing of wood with surfaces of slate are also useful for the construction of places suitable for storing flour, wheat, oats, and other grain, which is kept thereby cool and fresh; corn and flour bins may also advantageously be lined with veneered slate. Vats for fermentation may also be constructed in the same manner, brewers utensils, and receptacles for storing yeast; and instead of slate, stone may be veneered on wood for some of the above and similar purposes.

[Printed, 10d. Drawing.]

A.D. 1858, November 24.—No. 2665.

NEWTON, WILLIAM EDWARD. — (*A communication.*) — (*Provisional protection only.*) — This invention relates to the construction of mills adapted to the grinding of corn. In these mills the lower is the running stone. It is surrounded by a case of peculiar construction fixed upon a cross piece attached to the framing, and the mill spindle is supported laterally by a bearing in a cast iron arched piece of framework. The upper or stationary stone rests upon the casing of the lower stone, and is accurately adjustable thereon by three pins adapted thereto. The case is made air-tight by a band of wood. The runner is driven by a band which works round a large pulley fixed on its vertical spindle, the working height whereof is adjustable by a screw, on the point of which the lower end of the spindle rests.

The grinding operation of the mill is facilitated and the meal cooled by forcing air between the grinding surfaces, by means of a fan adapted to the stationary stone, the air in the air chamber being distributable at will, either into the eye of the stone or by means of passages leading through the stone to different points of the grinding surfaces, and in order to free the air from dust and other impurities, a damp sponge is adapted to the central orifice of the fan case, and by this means also the air is cooled.

The air may be exhausted by a fan or otherwise from the case of the running stone through openings into an outer case, and be conveyed away to any suitable receptacle. In this way two or more pairs of stones may be made to communicate with one common chamber exhausted by one apparatus.

[Printed, 4d. No Drawings.]

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1859.

A.D. 1859, January 27.—No. 244.

AGER, WILSON.—(*Provisional protection only.*)—This invention relating to the process of cleaning rice, consists in forcing a current of cool air through the rice to prevent its heating whilst undergoing the operation of removing the inner pellicle.

This auxiliary process is employed by the inventor in the working of his own machinery for cleaning rice, for which Letters Patent, dated April 9, 1858, No. 763, were granted to him, the current of air is forced by a condensing pump into the cylinder which is made hollow for the purpose, and thence through small holes or perforations made through the surface of the cylinder, the air is discharged and passes through the grain.

The invention is applicable to other rice cleaning apparatus.

[Printed, 4d. No Drawings.]

A.D. 1859, February 4.—No. 330.

CLARK, WILLIAM.—(*A communication from Louis Jacques Chateau.*)—This invention relates to the process of preserving grain, flour, and other vegetable and animal substances, and to the apparatus employed, which consists of a wooden cylinder enclosed within a casing of tinned iron. The cylinder is constructed with staves bound together by hoops, similar to a cask without a bilge, and is 3 feet 3 inches in diameter and 6 feet 6 inches high. Around each of the ends of the casing is fixed by rivetting and soldering, a ring of angle-brass, to the projecting flange of which the ends of the casing when being closed are respectively bolted, the whole being made perfectly air tight by soldering and otherwise. Fixed near the lower end is a flanged stop-cock, through which the interior is put into communication with an air pump. When the substances to be preserved are deposited in the wooden cylinder, a certain quantity of quick lime is also put in at the same time, and then the ends respectively of the cylinder and casing are hermetically closed, and by means of the air pump applied to the tap, the air is exhausted and as perfect a vacuum as possible is established within the cylinder. If any

air remains and causes a tendency to heat in the grain, the carbonic acid gas generated thereby is absorbed by the lime.

[Printed, 6d. Drawing.]

A.D. 1859, March 17.—No. 676.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Pierre Marmay.*)—The object of this invention is “to obtain meal from barley in great purity.”

The barley is first sifted, and then pounded or crushed between peculiarly formed millstone surfaces; it is next passed through a bolting machine, and then subjected to the action of a “ventilating” apparatus. Afterwards the pounding and crushing operation is repeated, and finally it is separated by sifting into two, three, or more different qualities. The grinding surface of the upper or running stone is formed by preference with radial furrows and projections upon it, but the special construction of the stone is not claimed.

The meal obtained by repeating the process as described, may be used in the form of a “potage-au-lait,” or in soups, gruel, or otherwise.

[Printed, 4d. No Drawings.]

A.D. 1859, March 18.—No. 692.

THIRION, ALBERT LOUIS.—This invention relates to the construction of grinding mills, adapted to be driven either by the wind, water, steam, or by manual labour.

Describes the manner in which the wings or sails of a windmill are made self-regulating according to the strength of the wind, and also the mode of driving a vertical mill shaft from a horizontal shaft by means of a spiral coil, for which invention (it is stated) Letters Patent dated March 24, 1858, No. 624, were granted to this inventor. The present invention mainly consists in, besides the mode of driving without the aid of bevil toothed wheels, the manner adopted for mounting the grinding stones, the lower or bed stone, in the case of a windmill, being poised on a center adjustable as to height, so that it has liberty to oscillate and accommodate itself to the level of the surface of the running stone, but is prevented from turning by bands. The upper or running stone is fixed on the



lower end of a vertical shaft, which together with the stone is supported and rotates on antifriction rollers, there being an annular flange, that is fixed upon the shaft and rests upon the rollers, which are carried by a rigid part of the framework. The feeding hopper is fixed upon the running stone and revolves therewith.

Describes and exhibits a watermill fitted up according to the invention. In this case the bottom stone is the runner. There is also a hand mill, and when steam is employed the arrangements are in most respects similar.

[Printed, 10d. Drawing.]

A.D. 1859, March 31.—No. 811.

NEWTON, WILLIAM EDWARD.—(*A communication from Peter McKinley.*)—This invention relates to the construction of a pestle and mortar apparatus, to be employed for the purpose of cleaning off the thin skin or film which remains on grains of rice after the outer shell or hull has been removed, the advantages obtained being, a more rapid up and down motion of the pestle; the drawing off the cleaned rice from the bottom of the mortar instead of removing it by means of scoops from the top; adapting lighter pestles to the machinery, which requires less power to drive, does not break the rice, and is not liable to derangement; the means of adjusting the height of the pestle on the rod, and the consequent effect on the rice by the blow of the pestle which strikes from 120 to 150 times per minute, so as to cause greater or less displacement and friction of the rice.

The main feature of the invention consists in adjustably attaching by means of nuts, the pestle to a vertical rod which passes through the bottom of the mortar. The reciprocating movements of the rod are derived from a crank shaft, by means of a connecting rod which is jointed to its lower end, and this shaft finds bearings inside levers which are pin jointed at one end to the frame, but which can be raised or lowered at the other ends by means of screw rods, whereby those ends are suspended.

The rice when cleaned is let out of the mortar through an opening near the bottom by simply raising a slide.

[Printed, 8d. Drawing.]

A.D. 1859, April 16.—No. 955.

COLLIER, LUKE.—(*Provisional protection only.*)—This is an invention of an apparatus designed for feeding or supplying grain, loaf-sugar, drugs, and other substances, to grinding and crushing mills, and other machines, with (it is stated) a degree of regularity and certainty not hitherto attained.

“ The material passes into a hopper and falls at the lower  
“ part upon an endless feeding band, the motion of which  
“ carries the material out of the hopper in any desired  
“ quantity, its adjustment being determined by a sliding  
“ door or valve furnished with a regulating screw and nuts;  
“ the band from the hopper passes over a roller or drum at  
“ the front of the apparatus, at which position the material  
“ is delivered to the machinery intended to act upon it. The  
“ band is then acted upon by a brush, and afterwards passes  
“ under a roller at the lower part of the apparatus, and  
“ also over a friction roller covered with leather or other  
“ friction material, and is kept tight upon it by the pressure  
“ of a heavy roller, the shaft or trunnions of which work in  
“ vertical slots or guides; motion of any required speed  
“ is given to the friction roller by means of pulleys or  
“ gearing.”

In a modified form the apparatus may (it is stated) be made available for feeding furnaces.

[Printed, 4d. No Drawings.]

A.D. 1859, May 6.—No. 1145.

BOUSFIELD, GEORGE TOMLINSON.—(*A communication from Pierre Etienne Brisson.*)—This invention relating to the constructional details of machinery for grinding grain, is (as stated by the patentee) applicable to mills where two horizontal grinding stones, placed one above the other, are employed, and it consists in balancing each stone on a kind of gimbal apparatus, so that each stone is free to incline in any direction, whether it be the runner or otherwise.

“ The lower stone is by preference supported on the end of  
“ an axis (which is caused to rotate in any suitable manner  
“ by two projecting pins on the axis entering slots in a ring  
“ on the exterior of which there are two other projecting  
“ pins which enter slots in a ring attached to the centre of the

“ stone; by this means, when the axis is caused to rotate,  
“ the stone will be carried round with it, but the stone will also  
“ be able to incline in any direction, although the centrifugal  
“ force of the rotating stone will tend to keep it in a horizontal  
“ position. The upper stone has connected to it two bearings,  
“ in which the two ends of a rod turn, this rod is connected  
“ to another rod at right angles with it, the ends of which  
“ project beyond the periphery of the stone, and turn in  
“ bearings in the framing of the machine. By this means  
“ the upper stone is prevented from rotating, but is free to  
“ incline in any direction, the corn or other substance to be  
“ ground is fed in at the eye of the upper stone, and there  
“ are radial arms attached to the centre of the upper surface  
“ of the lower stone, which as the lower stone rotates, throw  
“ the corn or other substance to the ground in between the  
“ two stones.”

[Printed, 6d. Drawing.]

A.D. 1859, May 11.—No. 1182.

CLARKE, HENRY.—(*A communication from Thomas Narburgh.*)  
—This invention relating to the working of grinding mills,  
has for its object (as described) “ the balancing of the running  
“ stone of millstones to the running as well as to the standing  
“ state, which is accomplished by having a number of holes  
“ or recesses suitably formed in the said stone, with portable  
“ boxes, cups or buckets placed therein for holding lead, shot,  
“ or other suitable weighting substance for producing the  
“ standing balance; which boxes, or the weights therein, are  
“ capable of being raised or lowered in the said holes by  
“ screws or other regulating means, and thereby the running  
“ balance is effected as required.”

[Printed, 10d. Drawing.]

A.D. 1859, May 18.—No. 1236.

NICHOLLS, WILLIAM.—(*Provisional protection only.*)—This  
invention relates to the construction of portable corn mills,  
for which purpose is employed a strong frame that is  
mounted on travelling wheels, and fitted with a pair of shafts,  
in which the horses that draw it from place to place are har-  
nessed. The millstones are mounted in a suitable manner



upon the frame, and are driven by tooth gearing from a vertical shaft, that is actuated by horse power by means of a long horizontal lever or arm, after the manner of a "horse gin." A regulating screw adjusts the grinding surfaces with great nicety, and a corn bin and hopper are placed in position over the stones. "Other apparatus may obviously be combined for the purpose of cleaning and dressing the corn as well as for grinding it, the whole forming a compact and portable corn mill."

[Printed, 4d. No Drawings.]

A.D. 1859, May 24.—No. 1279.

JONES, GILBERT DANIEL.—This is an invention of a kind of duplex mill in which two running stones are, whilst revolving on their axes, respectively caused to gyrate on an annular bed. The under or grinding surfaces of the running stones have the form of flattened cones, and there is an annular groove of corresponding form made in the bed to receive them. A strong vertical shaft passes up through the centre of the bed and carries a cross head, in the ends of which are fixed two strong spindles pointing downwards directly over the centre of the annular groove in the bed. Fitted in the centre of each running stone is a vertical socket, and each of these sockets receives one of the strong spindles and with the stone is free to revolve thereon, the grinding surfaces of the two stones resting fairly in the annular groove, one stone being disposed on each side of the central shaft which, when set in motion carries the running stones round the groove in the bed, each stone being caused by the friction independently of the other stone to rotate on its own axis; scrapers affixed to the central shaft follow the stones round the bed. The mill is fed down a central spout from a hopper above, and is surrounded by a cylinder of wire gauze or of cloth open in texture.

[Printed, 10d. Drawing.]

A.D. 1859, May 28.—No. 1321.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Jean Baptiste Falguière.*)—This invention relates to the construction of a combined apparatus designed for effecting the cleaning, grinding, and bolting corn and other grain, the three processes being performed in one machine. The clean-

ing section of the combined machine consists “ of a hopper  
“ from which a shaker or sieve delivers the grain through a  
“ spout into a separating cylinder set horizontally, or at a  
“ slight angle with a horizontal line, and caused to rotate;  
“ the good grain is separated from foreign substances, and  
“ falls through a spout on to an endless screw, which conducts  
“ it into a cribble composed of an internal and external  
“ cylinder, both made to revolve at different speeds. The  
“ interior cylinder is of wood covered with rasps or metal  
“ with an exterior rasping surface, while the inside surface of  
“ the outer cylinder is partly of similar rasps. The grain,  
“ husk, &c., fall from the cribble into a chamber, where  
“ they are acted upon by a blast, whereby all husk, dirt, &c.,  
“ are driven off from the grain, which is taken by an endless  
“ screw and delivered into a hopper, from which it passes to  
“ be ground. From a stirrer at the bottom of the hopper  
“ the grain passes into a shoot on to a screw, which passes  
“ through the eye of a stationary grindstone. The screw re-  
“ volves with the revolving stone and delivers the grain be-  
“ tween the stones. Instead of stones, steel or other suitable  
“ grinding surfaces may be used. The stones are set verti-  
“ cally, and are of smaller diameter than those usually em-  
“ ployed. The working stone is driven at great speed, say,  
“ from 800 to 1,200 revolutions per minute. The non-rotating  
“ stone is capable of being moved to and fro, in order to regu-  
“ late the distance between the grinding surfaces. From the  
“ stones the ground stuff is conducted through a spout into  
“ the hopper of the bolting machine. This machine con-  
“ sists of an inclined drum, clothed with silk or other suitable  
“ cloth, and divided into compartments; the cloth round  
“ each separate compartment is of different degrees of fine-  
“ ness. The divisions between the compartments are so  
“ arranged as not to allow of the material passing them until  
“ it will no longer pass through the cloth round the drum.  
“ The flour as it passes through the cloth out of the drum is  
“ received in an outer case is collected by an endless screw,  
“ and is delivered by it into a spout. At the outlet from one  
“ compartment to the other is a circular revolving brush,  
“ which brushes the bran, and prevents any flour being carried  
“ away with it.”

[Printed, 10d. Drawing.]



A.D. 1859, May 30.—No. 1330.

FRY, JAMES.—This invention relating to the construction of mills for grinding the coarser kind of farinaceous meals by means of metallic surfaces, chiefly for the use of agriculturists' feeding purposes, consists in substituting, for the stones ordinarily employed, "two cast-iron plates of dimensions proportioned to the work required to be done with them. In each of these plates I form a series of round holes, the diameter of which vary in extent, the largest near the centre of the plate, being about an inch and a half or a little more or less, and then gradually and proportionally decreasing in size as they approach the outer edge to about one quarter of an inch. The number of these holes may be as many as can be cast in the plate, so as to allow sufficient thickness of metal in it. I propose also in some cases to furrow or slot the plates, and also when thought requisite I would case-harden them. The plates being now formed, each has a back fixed to it, and may now be arranged like an ordinary pair of millstones, and actuated by the usual driving gear, either in a horizontal or vertical plane, or for portable purposes turned by the hand, and having the usual adjusting or regulating screws for approximating the surfaces; either plate may be the runner, or there may be two runners with a central fixed one."

[Printed, 4d. No Drawings.]

A.D. 1859, June 3.—No. 1372.

NEWTON, ALFRED VINCENT.—(*A communication from John Fairclough.*)—(*Provisional protection only.*)—This invention of a method of balancing millstones, relates to the employment for the purpose of adjustable weights so fitted in the upper stone or runner, that the stone (it is stated) will be perfectly balanced both as regards its gravity or weight, and centrifugal force. "In the upper surface of the stone recesses are made to receive metal boxes fitted with parallel vertical guides. Of these boxes four or more or less may be used, the same being placed at equal distances apart. In each of these boxes a vertical screw shaft is mounted, the upper end having its bearing in the cover

“ of the box, and its lower end being stepped at the centre of  
 “ the bottom of the boxes. The screw shafts are allowed to  
 “ turn freely in their boxes, and they are square at their  
 “ upper end to receive a key for turning them. Each screw  
 “ shaft carries a circular plate fitted to slide over the vertical  
 “ guides in the box; these plates are intended to carry a series  
 “ of annular weights which are secured by passing a nut down  
 “ over the screw shaft. The weights are thus fitted on the  
 “ shafts, so that they may be readily raised or lowered by  
 “ means of a key. In order to balance the stone (so far as its  
 “ gravity is concerned) on the supporting spindle, the weights  
 “ are distributed in the different boxes as required; but by  
 “ doing this centrifugal force will be generated when the stone  
 “ is rotated, and this adjustment of the weights in order to  
 “ balance the stone on the spindle may cause a lateral pres-  
 “ sure and an undue degree of friction on the collar of the  
 “ spindle. . . . . To remedy this difficulty the  
 “ weights are to be raised or lowered in the boxes by turning  
 “ the screw shafts, in order to adjust the centre of gravity of  
 “ the weights relatively to the point of the spindle, that is to  
 “ say, higher or lower than the point of the spindle, and  
 “ thereby to neutralise this unequal centrifugal force.”

[Printed, 4d. No Drawings.]

A.D. 1859, July 4.—No. 1588.

LANE, ROBERT.—(*Provisional protection only.*)—This inven-  
 tion relates to the construction of mills devised for grind-  
 ing grain and other substances, and wherein by the aid of  
 “ certain mechanical appliances” (it is stated) the process of  
 grinding corn and other grain can be effected with increased  
 speed and efficiency. The inventor says, “ I divide the dis-  
 “ tance from the edge of the feed passage to the periphery  
 “ of the runner into three nearly equal parts, the outer part  
 “ being the ordinary kind of burr stone, the second part or  
 “ stout cast-iron ring having cavities cast therein in which  
 “ thin square-edged knives are dropped obliquely, and secured  
 “ therein by keys; these knives being placed in such a posi-  
 “ tion as to continue the lines of furrows in the stone, and  
 “ are also placed a little within the surface of the stone. The  
 “ third or inner part is a circular roughed chill casting, also  
 “ a little within the surface of the knives, but having projec-

“ tions thereon level with the surface of the knives, and  
 “ placed at such an angle that as the corn or other grain is  
 “ crushed between this chill casting, and that in the bed  
 “ stone, it is driven (by the projections) between the knives  
 “ where it is cut to a second degree of coarseness until it  
 “ ultimately reaches the stones, when it is ground to the  
 “ required degree of fineness.”

“ In order to adjust the knives and stones, projections are  
 “ formed on the reverse side of the casting, for holding the  
 “ knives, which projections have vertical grooves formed  
 “ therein, into which are placed the ends of metal arms  
 “ verging towards the centre, the ends in the grooves having  
 “ right and left handed screws passed through them, so that  
 “ by turning each screw half a revolution or more the knives  
 “ and stones can be adjusted to the greatest nicety. For the  
 “ purpose of forcing air between the knives and stones, I  
 “ make vertical openings or apertures in the runner over  
 “ which I place air covers slightly raised from the surface.”

[Printed, 4d. No Drawings.]

A.D. 1859, July 9.—No. 1640.

MAC KEAN, WILLIAM.—This invention, relating to the manufacture or treatment of grain, such as Indian corn and sago, has for its object the purification of the farinaceous matters, and the separation of the finer from the coarser parts, with a view to obtain therefrom starch, or food of delicate quality.

In purifying Indian corn, the first part of the process consists in washing it in lukewarm water, and then treating with a weak solution of bicarbonate of soda, and after another lukewarm water bath the grain is treated with a weak solution of acetic or tartaric acid, and finally again washed.

In order to obtain food of delicate quality from Indian corn or other grain, and sago, the grain thus purified is reduced to a pulp by ordinary millstones in mills through which is passing a small stream of water. The pulped grain as it comes from the stones is sieved, and the milky liquid which contains the gluten and the amylaceous flour in combination with the natural oil of the grain runs into a tun, the shaking sieve used in potatoe mills being preferred. The oil is first saponified by adding to the milky liquid an extremely weak alkaline solution, containing not more than 100 grains of soda to a gallon; this is

added until the mixture slightly reddens turmeric paper. It is then allowed to settle, and the supernatant water containing the oil and part of the gluten is run off into a separate vessel, whilst fresh water is repeatedly added to the deposit and drawn off until it ceases to extract colour. At this stage of the process the deposit is again brought on to a sieve which separates a large amount of the freed gluten, and to the matters which pass is added in small quantities, the weak alkaline solution until it slightly reddens turmeric paper. The remaining gluten first subsides, and just as the amylaceous matters begin to descend the liquor is drawn off into another tun, where, after being brushed, scraped, washed, and treated with a weak solution of bicarbonate of soda and finally washed with pure water, the amylaceous flour will be found deposited in a hard mass, that is to be cut out with trowels, pressed through a sieve, and when dried, pulverized by a common bolting machine, and packed for market. The gluten, bran, and fibrous parts of the grain are dried and ground for food, either to make bread or for feeding cattle. A mode of treating "sago flour" is also described.

[Printed, 4d. No Drawings.]

A.D. 1859, July 28.—No. 1753.

NEWTON, WILLIAM EDWARD.—(*A communication from Joseph Cornelius Lyons and James Schenck Wyckoff.*)—(*Provisional protection only.*)—This invention relating to the constructional details of mills designed for grinding grain, consists in:—

1st. "A novel arrangement of a clasp which is retained by a pin, and secured to a hand wheel by a thumbscrew in such relation to the shaft of the mill and to the grinding cone, that the shaft and grinding cone may be readily adjusted and firmly secured, whether the machine is in operation or at rest."

2nd. "Arranging a double flanged pulley with a fork and rod in such relation to the shaft of the mill and to the shell of the corn cracker that, by the adjustment of the shaft and cone, the shell of the corn cracker will also be adjusted, if both the grinding cone and the corn cracker are enclosed in the same case, and mounted on the same shaft."

3rd. "A novel arrangement and combination of the grinding cone and corn cracker, mounting the same on different shafts which are parallel to each other, and which are con-



“ nected by means of gear wheels in such a manner that the  
 “ grinding cone can be adjusted at pleasure in a longitudinal  
 “ direction without interfering with the operation of the  
 “ cracker, and that the cracker can be operated at any desirable  
 “ speed, and independent from the cone, and the cone  
 “ independent from the cracker.”

4th. “ A novel arrangement and mode of constructing the  
 “ grinding surfaces of the concave end of the grinding cone.  
 “ The grinding surface of the concaves which surround the  
 “ grinding cone are fluted, but instead of continuing the flutes  
 “ from one end to the other as is usual, two rows of flutes are  
 “ cut into the surface of the concave, one row commencing on  
 “ the small end, and extending to points a little over two-  
 “ thirds of the entire length of the concave, and the other row  
 “ commencing on the large end, and terminating at points  
 “ extending a little more than one-third of the entire length of  
 “ the concave. The two rows are so arranged that ridges are  
 “ formed between each adjoining pair of the points, so that the  
 “ substance which is to be ground and which enters from the  
 “ small end of the concave as it arrives at these ridges is ex-  
 “ posed to the action of the grinding cone with more advantage  
 “ than with the ordinary grinding surfaces. The grinding  
 “ surface of the cone is arranged in a similar manner.”

[Printed, 4d. No Drawings.]

A.D. 1859, August 4.—No. 1799.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Joseph Poole Pirsson.*)—This is an invention of a duplex household mill, adapted to the grinding of coffee, corn, and other substances, the object being, especially in the grinding of coffee, to reduce the ground particles as nearly as possible to a uniform size. To this end instead of employing a mill with one conical grinder, fitted to revolve on its axis in a case of similar form, the case is made with two conical chambers or cells in communication, one above the other, and fitted inside are two conical grinders, one in each chamber, the surfaces respectively of the grinders and chambers being cut with angular grooves in the usual way, the cutting edges of the grooves on the grinders, lying in the opposite directions to those in the chambers. The axis of the top grinder carries, *outside* the case, a handle on one end and a tooth wheel on the *other, which engages with another but smaller tooth wheel*



fixed on the axis of the lower grinder, and by this means the two grinders are caused to revolve in opposite directions at different speeds. The top grinder receives the coffee or other substance to be ground from a hopper above, and having the coarsest grooves, it merely breaks or cracks the berries or substances into smaller pieces or particles that pass downwards upon the lower grinder which, as also its chamber, is cut with finer grooves that finish the operation.

[Printed, 10d. Drawings.]

A.D. 1859, August 25.—No. 1940.

PERKINS, LOFTUS.—(*A communication from James Bogardus.*)—(*Provisional protection only.*)—This invention relates to the construction of mills for grinding. In these mills (as stated by the patentee) “two circular metal plates or discs are employed as grinding surfaces; they are made of cast iron, and are chilled; the working surfaces of the plates have ridges formed on them. The lower plate is mounted on the upper end of a vertical axis carried in a suitable frame, and the upper plate, which has a hole through it at the centre, is mounted on the lower end of a hollow or tubular axis, so that the upper plate is brought parallel with the lower plate and almost in contact with it. The axis of the upper and lower plates are excentric the one to the other. When the mill is in action, the axis on which the lower plate is mounted is driven by a band, or in any other convenient manner, and the material to be ground is fed between the two plates through the hollow axis of the upper plate. The upper plate is not directly driven, but is carried round by the lower plate, and the plates being excentric the one to the other, the ridges of the one plate move over the ridges of the other plate, so as to produce a cutting or sheering action, and thus the material between the plates is rapidly divided and ground.”

“The axis of the lower plate is capable of moving longitudinally, and the two plates are kept up, the one to the other by a weight; they are, however, kept out of actual contact by a stop.”

“The eccentric arrangement of the grinding surfaces causes the ground material to escape very readily from between them.”

[Printed, 4d. No Drawings.]

A.D. 1859, August 26.—No. 1949.

BOUTET, CHARLES THOMAS.—(*Provisional protection only.*)—This invention relating to the constructional details of a “mechanical mill proper for milling every sort of grains “dried or torrified, such as coffee and cocoa,” is stated to consist in:—

1st. “A wooden box or room in which the apparatus is “mounted.”

2nd. “A mill-hopper or recipient containing the grains, “which falls into the box by the grooved opening in the “bottom of the hopper.”

3rd. “Six iron pestles bruising the grain.”

4th. “Two iron cross-bars, used as guides for each pestle.”

5th. “Two iron plates used to fix the guides.”

6th. “Six circular notchs for raising the pestles.”

7th. “An iron grating with a thin iron plate perforated in “order to make a sieve, in which passes the bruised grain.”

8th. “Two thin iron plates bent for conducting the grain “between the cylinders.”

9th. “Two iron cylinders for milling the grain into “powder.”

10th. “A screw which tightens or looses the cylinders in “order to mill bigger or smaller.”

11th. “A drawer to receive the grain when milled.”

The mill is actuated by a handle, and is stated to be “a “bruiser and a miller put in motion by a single movement,” also that it can be made at a low price, and is capable of doing five or six times the amount of work generally performed by ordinary mills. It occupies but little space, can be placed anywhere, is not subject to wear, and “a stone or anything of “the sort cannot be mixed with the grain when milling.”

[Printed, 4d. No Drawings.]

A.D. 1859, September 7.—No. 2046.

CREED, EDMUND.—(*Provisional protection not allowed.*)—This invention of a mode of dressing the millstones employed in hulling and cleaning rice and other grain, is devised for the purpose of causing a more equable progress through the mill of the rice or grain, which (it is stated) according to the present mode, is retained too long at and near the eye of the

stone, and is thrown off too quickly at the periphery. To obviate this the inventor says:—"I make use of a pair of stones, and prepare their working or grinding surfaces with grooves made curved in form, being segments of circles having their centers outside the eye of the running stone. These grooves I intersect by radial grooves passing from the centre of the stone to the periphery, the action of which latter are to arrest the grains which are being carried from the centre to the periphery, and cause them to fall upon their longest diameter, so that the husk or hull is more readily and easily knocked off. The stones are adjusted by a tripod and set screws which act at the ends of the arms."

"I propose also to apply an exhaust blower, in order to drive off the husks or hulls or dust from the grain, which may be received in a chamber in a bend or elbow in the said exhaust pipe."

[Printed, 4d. No Drawings.]

A.D. 1859, October 6.—No. 2276.

TINDALL, ENOCH OLDFIELD.—This invention relates to the construction of mills especially adapted to the crushing, rolling, or reducing by means of a pair of rollers furnished with annular grooves, of oats, barley, and other grain and seed, and also applicable to machines for reducing a variety of other substances.

As fitted up for crushing of oats or barley, the machines consist of a pair of crushing rollers furnished with a close series of annular grooves from end to end, the ridges formed by the grooves of one roller fitting into the grooves of the other rollers, and vice versa. The axes of the rollers are mounted on a suitable frame, and carry respectively fixed on their projecting ends, two tooth wheels which engaging together, cause the rollers to rotate at different speeds, one tooth wheel being much smaller in diameter than the other. The rollers are made capable of adjustment as regards distance apart by means of screws which cause the bearings of one roller to slide on the frame nearer or farther from the bearings of the other roller, as may be required according to the nature of the material to be operated upon. The mill is fed from a hopper, which is so placed over one of the rollers that the latter acts as the feeder, there being a slide which is moved up and down by a

regulating screw for the purpose of more or less opening or closing the passage through which the grain escapes upon the feeding roller, and is carried by it towards the other roller, and then passing between the two rollers is crushed.

The mill is turned by a handle projecting from one of the arms of a fly wheel, that is mounted outside the frame on the axis of one of the rollers.

[Printed, 10d. Drawing.]

A.D. 1859, October 19.—No. 2396.

BRUCKSHAW, JOHN, BRUCKSHAW, HENRY, and UNDERHILL, WILLIAM SCOTT.—This is an invention of apparatus designed for raising or "elevating grain or other similar substances," and consists in (as described by the inventors) the employment of a revolving fan, which is stated to be applicable to thrashing machines, corn mills, granaries, warehouses, and to other places where grain has to be raised. "The fan is one of the common rotary description, driven in the usual manner, and the substances to be raised are caused to pass in at the sides of the fan, and are delivered into a passage or spout on the outer edge or rim only, and in manner similar to that in which the blast is used in a common smith's fire. The grain or other substance is raised by the joint action of the fan and blast."

[Printed, 10d. Drawings.]

A.D. 1859, November 3.—No. 2500.

WHITE, GEORGE. — (*A communication from Leon Jean Emile Dupont.*)—(*Provisional protection only.*)—The object of this invention of an apparatus for steaming wheat and other grain, is, that by such process the bran is subsequently more easily separated from the flour in grinding. The apparatus is so constructed that the grain whilst passing from one hopper to another in a regular layer over an inclined plane, is during its passage exposed to the action of steam, and this operation may, if needful, be repeated several times.

[Printed, 4d. No Drawings.]

A.D. 1859, November 7.—No. 2533.

MELINE, GEORGE.—(*Provisional protection only.*)—This invention, relating to a device for keeping millstones cool whilst



working, and thereby prevent heating of the flour, consists of apparatus comprising separate air chambers or hoods, disposed upon the movable stone. The drawing represents an apparatus with three air gathering hoods, respectively to be made of any suitable material, either wood, or sheet iron, having large ends or mouths opening in the direction the stone rotates, contracting into tubes at the other extremity, and terminating towards the periphery of the stone, the air gathered by them as the stone rotates being directed through slanting passages in the stone, is conveyed into the casing in a cool constant current "around the stone, cooling the flour, and " preventing its sweating."

[Printed, 6d. Drawing.]

A.D. 1859, November 28.—No. 2690.

BENTALL, EDWARD HAMMOND.—This is an invention of two machines or apparatus respectively designed, one for crushing or bruising oats or soft seeds, and the other for cutting up, crushing or bruising beans or other hard seeds.

1st. The invention as regards the soft seed machines, refers to what is stated to be a novel arrangement of the parts which regulate the feed to the operating rollers, and which consists of a slide adapted to the exit aperture of the hopper; also to the construction of the bearings in which the rollers are so mounted, as to admit of their own self adjustment in relation to their work, and also to enable the attendant to lubricate them with facility.

2nd. The operating rollers of the bean crushing machine are made of steel, and cast either solid or in the form of a hollow cylinder fitted on to a shaft or axis. The surface of these bean crushing rollers may be serrated, grooved, or otherwise indented, or furnished with projections according to the nature of the material upon which they are intended to operate. The two machines may be separately constructed or combined in one, as exhibited in the drawing.

[Printed, 10d. Drawing.]

A.D. 1859, December 24.—No. 2946.

NEWTON, WILLIAM EDWARD. — (*A communication from Mr. Cabanes.*)—This invention relating to the construction of grinding mills, consists: In the mode of working; of distri-



buting and regulating the passage of air; the construction of the runner casing and the adaptation thereto of an annular chamber and rotating platform; and the mechanism employed for supplying the grain. The invention as described by the patentee, is stated principally to consist "of a pair of horizontal stones or grinding surfaces, the lower one of which is moveable and is made to rotate on its axis, while the upper one is stationary and is supported upon suitable feet or standards connected with or attached to the casing that surrounds the lower stone or runner. This casing is lined inside with wood in order to prevent the metal connected with the moving part of the mill from coming into contact with the metal of the fixed part of the machine; the casing is moreover provided with a boss through which the spindle of the running stone passes. The stationary stone is pierced with several holes through which pass currents of air from a fan or blower so that the air may be distributed throughout the narrow space between the grinding surfaces. The air thus forced in and made to circulate round the stones may be exhausted or drawn out by means of suitable apparatus and thereby made to accelerate the grinding operation. The meal passes out through numerous openings in the case, to which openings are adapted wooden spouts whereby the meal is delivered on to a circular platform to which rotary motion is communicated by any suitable mechanism."

[Printed 10d. Drawing.]

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1860.

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A.D. 1860, January 12.—No. 81.

ORCHARD, WILLIAM HENRY.—(*A communication from Henry Darling.*)—(*Provisional protection only.*)—This invention relates to the dressing or furrowing of millstones employed for cleaning or hulling rice or other grain. The inventor says:—"In place of forming the grooves or furrows in radial lines from the centre or eye of the stone to the periphery, and intersecting the same by straight or curved lines as heretofore

“ practised, I cause the furrows or grooves which start from  
“ or near the centre or eye of the stone to be curved spirally  
“ outwards for about two-thirds of the distance towards the  
“ outer circumference, each groove or furrow then curves in  
“ the opposite direction till it terminates at the periphery.  
“ From each of the last-mentioned double-curved spiral  
“ furrows another curved furrow is cut, which starts from  
“ each of the said furrows near the periphery, and runs nearly  
“ at right angles to the double-curved spiral furrow until it  
“ terminates at the periphery of the stone near the end of the  
“ next double-curved spiral furrow, and the said double-  
“ curved spiral furrows are connected by another curved  
“ furrow near the eye of the stone.”

The bed stone is furnished with a series of additional curved furrows starting from each of the double-curved spiral furrows and joining the curved furrows near the circumference of the stone, and thus all the furrows of both stones consist entirely of curves.

[Printed, 4*l*. No Drawings.]

A.D. 1860, January 20.—No. 143.

CLISSOLD, WILLIAM.—(*Provisional protection only.*)—This invention relates to the construction of that class of grinding or crushing machinery wherein (it is stated) “the material  
“ to be operated upon is placed in a cylinder and pressed  
“ between the inner periphery thereof and crushing rollers  
“ contained in the cylinder. Hitherto this cylinder, or the  
“ rollers contained therein, or both have been made to rotate,  
“ but the grinding or crushing action has not been in every  
“ respect satisfactory. In lieu of this mode of actuating the  
“ operating surfaces I propose to give the cylinder a reci-  
“ procating motion, equal say, to about one third, more or  
“ less, of a new revolution, and to place two independent  
“ crushing rollers loose in the cylinder. They will, therefore,  
“ roll over the lower part of the cylinder, and by rubbing  
“ together clear each others surfaces of matters adhering  
“ thereto. This reciprocating motion I propose to impart by  
“ means of a crossed chain passed over or attached to a  
“ pulley on the axle of the crushing cylinder, and connected  
“ at its ends to a crank rod, the pin of which is operated by  
“ spur or other gearing. The cylinder is provided with an

“ opening at the top for feeding in the material to be operated upon, and at bottom with a discharge tap or outlet. As the cylinder and crushing rollers are kept in continuous motion by the rotation of the driving shaft of the machine, the material under operation will be caused to shift its position continually, and thus a more efficient reducing action will be obtained than heretofore. To ensure equal wear in the cylinder it will be necessary, from time to time to change the position of its connection with the chain which operates it so as to bring in succession the whole of the inner periphery under the crushing rollers.”

[Printed, 4d. No Drawings.]

A.D. 1860, January 20.—No. 148.

CALLARD, THOMAS KARR.—This invention relating to the preparation of wheaten flour, consists (as stated by the inventor) “ in the production of a better class of wheaten flour out of those wheats the inferiority of which arises from their excess of gluten, and this I do by combining therewith fecula obtained from a portion of the same or of other wheat, so as to bring the whole to consist of the requisite proportion of gluten and fecula according to the purposes to which the wheaten flour is to be applied, whether to bread, or cake or biscuit making, and it may be remarked that wheat injured in harvesting or housing, and therefore not adapted for making good flour by itself, is nevertheless capable of yielding fecula of a perfectly pure character, and suitable when mixed with wheaten flour deficient in fecula, in producing a high class of wheaten flour.”

Describes the process employed for the production of the fecula, which when dried and broken up, may be most conveniently mixed with wheat during the process of grinding, although the flour and fecula may be separately ground and combined afterwards.

[Printed, 4d. No Drawings.]

A.D. 1860, February 6.—No. 316.

ROECKNER, CARL HEINRICH.—(*Provisional protection only.*)—This invention relating to the manufacture of artificial mill-

stones adapted to grind mineral and other materials, and also grain, consists in combining for the purpose metal with grit-stone, cement and other calcareous matter and silicious substances capable of withstanding the heat to which millstones when in operation are subjected, the object being to render millstones more durable and more easy to dress, but less often requiring it. To this end it is proposed to construct millstones with calcareous and silicious substances and metal combined, and this it is stated "may be effected by employing

" strips or thin blocks of earthy or calcareous or siliceous

" substances or materials either in their simple state or of

" one or more different kinds combined together, and place

" the same in a circular flat mould at distances asunder, and

" then pour into the spaces, between each of the aforesaid

" strips, molten metal, so that when the same is cold or set,

" the whole becomes a homogenous mass, well adapted for

" grinding substances or materials as a substitute for metal

" or stone, when separately employed in the construction of

" millstones; . . . . or I form a casting of metal with strips,

" and pour the calcareous substance . . . . . into the space

" therein."

[Printed, 4d. No Drawings.]

A.D. 1860, February 13.—No. 395.

HOWARD, LEWIS JOHN THOMAS, and HOWARD, LEWIS.—This invention relates to the manufacture of bolting cloths for sifting flour from meal, the object being to prevent loose fibres, and by strengthening the cloths to increase their durability.

The inventors say:—"We manufacture fabrics of glazed

" cotton thread, either plain or strengthened at points about

" an inch apart, in order to prevent them rending beyond

" those points. If to be so strengthened we simply introduce

" two or three coarser threads at those points, or we tra-

" verse the shuttle two or three times in the same shed to

" produce the strengthening parts of the weft, while the

" warp is similarly strengthened by passing two, three, or

" more of the warp threads of the same fineness, or coarser,

" through the same heddle at the points desired. To prevent

" clogging the reed of the loom, instead of passing these

“ additional threads through the same opening therein, they  
“ may be distributed through two or more openings, so that  
“ there would be but a double quantity of warp through two  
“ or three adjoining openings of the reed at the points of the  
“ fabric to be strengthened.”

“ Having woven the fabric of glazed cotton thread, we then  
“ proceed to dress it with a solution of gum, using about one  
“ pound of gum to every gallon of water for the dressing of  
“ coarse cloths, but for fine cloths we dilute it a little more.  
“ We also mix about one ounce of turmeric with the solution  
“ of gum. The fabric is immersed in this solution, and after  
“ having removed all superfluous solution, it is stretched and  
“ dried in a suitable frame, or otherwise, when it is fit for  
“ use. The fabric so manufactured is of hard firm texture,  
“ is little subject to fraying or clogging while in use, and  
“ is moreover of a durable, and consequently inexpensive,  
“ character.”

[Printed, 4d. No Drawings.]

A.D. 1860, March 14.—No. 679.

JOHNSON, JOHN HENRY.—(*A communication from Silas Dodson and Alpheus Fobes.*)—This invention relating to the process of cleaning rice, and to the construction of the machinery employed, consists in as described by the patentee “ the  
“ application and use for that purpose of detachable and  
“ adjustable stone blocks so shaped that when combined they  
“ will form a hollow stone cylinder. In the interior of this  
“ cylinder revolves a vertical drum, having a number of  
“ overlapping strips of sheep skin secured vertically by one  
“ edge to the surface of the drum; this drum is also provided  
“ with loose or hinged drags or scrapers, which by the action  
“ of centrifugal force, tend to fly outwards and scrape the  
“ surface of the stone cylinder, thereby removing any coagu-  
“ lated matter deposited thereon. As the stone wears away  
“ the blocks are set up by suitable set screws to the proper  
“ gauge again. On the lower edge of the drum one or more  
“ vanes or projections are formed for the purpose of winnow-  
“ ing off the chaff or light husks which would otherwise  
“ collect in the lower shoot which receives the dressed and  
“ cleansed rice. The rice to be treated enters at the top of



“ the apparatus by a suitable shoot and hopper, and passes  
“ down between the surfaces of the stone cylinder and the  
“ revolving drum. If found desirable, a wire gauze cylinder  
“ may be used in lieu of the stone blocks.”

[Printed, 8d. Drawing.]

A.D. 1860, April 17.—No. 959.

STEVENS, CHARLES. — (*A communication from Hypolitte Durand.*)—This invention relates to a peculiar method of driving grinding mills by steam, not direct, but by means of a locomotive engine, which runs round the mill on circular rails laid upon a raised platform, and is regulated to a speed of 450 feet per minute. Two mills occupy the mid space, and between them at the central point, is mounted a vertical driving shaft which, by means of a long horizontal arm, is turned by the locomotive. One end of this arm is fixed on the upper end of the shaft, and the outer or free end of the arm is attached to and dragged round by the engine. A large spur wheel on the shaft engages with two pinions which run free with two other spur wheels on two intermediate upright stationary shafts, and the two latter spur wheels engage with pinions on the axes of the mills. By means of this mode of working mills, it is stated that an engine of six horse power will do the work of 12 horses.

“ The surface of the millstones is perfectly level till within  
“ 8 inches of the opening of the hole of the millstones, and  
“ from thence the cutting gradually deepens (for the turning  
“ stone only) as far as the said hole, where, the stones being  
“ ready to act, a small aperture only is necessary for the grain,  
“ which being thrust forward by two small brooms attached  
“ to the crank case, is immediately ground; and as this first  
“ operation takes place at the axis there is also an economy of  
“ power.”

The air for cooling the millstones is drawn in by the velocity of the running stones, which are five feet in diameter and make 120 revolutions per minute, and by the position in which the tubes of the air holes are arranged in the cover, all loss of flour is avoided.

[Printed, 10d. Drawings.]

A.D. 1860, June 7.—No. 1404.

CLARK, WILLIAM.—(*A communication from Jules René Lion.*)—This invention relates to a mode of preserving animal and vegetable substances, either in a solid or liquid state, including amongst a variety of other animal and vegetable raw or manufactured substances, wheat, flour, bread, and biscuits. This method of preserving consists in excluding, by various means most convenient to the treating of the particular substances under process, air, light, and heat, and in the case of wheat and flour, moisture. The vacuum may be produced either by an air pump, a barometric column, or the condensation of steam, the substances being placed in exhausted chambers or vessels hermetically closed.

When the process is applied to the preservation of wheat, flour, grain and similar substances, they after being desiccated, are deposited in a pit from which the air is withdrawn, and in some cases hydrogen gas, azote, dry heated air passed over chloride of calcium, and other gases, are substituted.

[Printed, 8d. Drawing.]

A.D. 1860, June 13.—No. 1448.

SPENCE, WILLIAM.—(*A communication from George E. Vanderburgh.*)—This invention relates to a process or method of reducing silicious substances to a fluid state, and using it for coating over the surface of blocks of stone, and articles moulded of clay, plaster, and other substances, to render their surfaces impervious to water. It may be applied to wood work to render it both water and fireproof, and also to a variety of other articles with the same result. It may be used as a cement in the manufacture of artificial millstones, for which purpose any suitable grinding, gritty, or polishing material, such as sand, disintegrated emery, quartz, pumice, flint, or any similar substance, may be taken and incorporated with such a proper proportion of the liquid silicate as will be required to make a plastic mass, capable of being moulded into the form of a mill stone for grinding purposes, a polishing wheel, a whetstone, &c.

The silicious substance usually employed, is composed of clean sand 85 per cent., mixed with 15 per cent. of commercial *potash* or *soda*, and submitted in a suitable vessel to the

action of superheated steam. Instead of sand, silicious stones after being reduced to the requisite degree of fineness, may be employed.

[Printed, 8d. Drawing.]

A.D. 1860, July 30.—No. 1846.

GOUGH, WILLIAM.—(*Provisional protection only.*)—This invention relates to a system of adjusting the center of gravity of millstones, whereby, whether in motion or at rest, they are accurately balanced. The inventor says:—“At four equidistant points on the upper side of the stone, and near its periphery, I insert metal cases or boxes, in each of which are two weights, one of the said weights resting on the bottom of the box, and the other on ledges or supports, near the middle of the box. One of the said weights is thus supported over the other. On one side of each weight a horizontal rack is inserted, and pinions engaging with the said racks are fixed on vertical axes, the tops of which axes project through the tops of the cases or boxes. By turning the said axes the weights may be moved backwards or forwards in the direction of radii, and the balance of the millstone be thereby effected. Although I prefer to use four sets of weights, yet three or other number of sets of weights may be employed with the same or nearly the same effect.”

[Printed, 4d. No Drawings.]

A.D. 1860, August 7.—No. 1908.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Pierre Etienne Brisson.*)—This invention, relating to the construction and working of mills for grinding corn and other grain, consists in:—

1st. A mode of suspending or supporting millstones by the central parts; both the upper and the lower stone are suspended in this way, so that both are free to oscillate. Ordinarily the upper is arranged to be the running stone, but this may be reversed; the upper may be stationary and the lower stone be made the runner.

2nd. The application of a ventilator in combination with an exhauster to mills employed in grinding corn and other grain.

The lower stone rests on gimbals carried by a cross frame, and the upper or running stone is supported by gimbals fixed on the top of the vertical mill shaft, which is set in motion by a strap pulley keyed on below. The grain is fed from a hopper, and falling down a feed pipe into a kind of bowl is distributed centrifugally to the grinding surfaces. The air supplied by the ventilating fan is driven into the feed pipe, and finds its way between the grinding surfaces, and another fan works an exhauster which draws air from the mill casing, both fans being fixed on one vertical shaft, which obtains motion from the vertical mill shaft by means of pulleys and an endless band. Springs may be applied under the frame carrying the lower stone, and this stone may be connected to the frame by a conical cap fitting over a conical center formed on the frame. The cap may rest on anti-friction balls. A receiver is provided for catching the ground material thrown out by the upper stone, without effecting the oscillation of either.

[Printed, 8d. Drawing.]

A.D. 1860, October 27.—No. 2632.

ASHBY, JOHN.—This invention relates to apparatus designed for cleaning grain before it is ground, and to the brushes employed in dressing meal or ground grain, such brushes being constructed with wrought iron or other metallic stocks.

The process of cleaning grain before it is ground is effected by brushes driven rapidly round within a cylindrical or other form of sieve or screen, the hair or bristles of the brushes being longer than usual, so that instead of the grain being scrubbed by the points of the bristles, which is the effect when the bristles are short, it is wiped, for the bristles being long yield to the friction and bend. In some cases two sets of brushes are employed in the same machine, respectively with long and short bristles, so that some of the brushes scrub the grain, whilst the others wipe and drag over it. Under some circumstances (it is stated) it may be found desirable to attain the dragging and wiping action of the brushes when of ordinary construction, by hanging them upon suitable jointed or flexible connections.

[Printed, 10d. Drawing.]



A.D. 1860, October 29.—No. 2640.

NEAL, THOMAS.—This invention relates to the constructional arrangements and mode of working grinding mills, in which the top stone is fixed and stationary, and the bottom stone is made to revolve. The lower or running stone is placed in a circular cast-iron case or “pan,” the stone and case being supported on the end of the vertical mill shaft, which passes up through a collar bearing carried by a cross frame, and is caused to revolve by bevel gearing actuated by a strap pulley, and capable, by means of screws or other devices, of being raised or lowered, for the purpose of adjusting the distance between the grinding surfaces of the two stones, or of bringing the grinding surfaces more or less into actual contact, according to the nature of the substance to be operated upon, and this is done without detriment to the working depth or pitch line of the two bevel wheels by certain arrangements and contrivances in the collar bearing, the chief feature of the invention which is relied upon being the case or pan wherein the lower or running stone is fixed, and the general arrangement of the parts.

[Printed, 10d. Drawing.]

A.D. 1860, November 30.—No. 2938.

FRY, JAMES.—(*Provisional protection only.*)—This invention relates to the constructional arrangements of mills intended for crushing and grinding grain, seeds, oil-cake, and other substances, the principle of construction being also applicable to mills for grinding or crushing cements, minerals, and ores.

In these mills it is proposed to make use of grinding surfaces that will not require the continual dressing necessary for ordinary millstones, and to this end the inventor says:—“I  
“ make use of plates of iron, preferably in segments, having  
“ oblong perforations or slots formed in their faces. A back  
“ is fitted to this plate, having studs cast upon it, which pass  
“ through the slots and come flush with the face of the front  
“ or perforated plate. The slots vary in size, the largest  
“ being near the centre, the others diminishing towards the  
“ circumference. The back and the perforated plate are  
“ secured together, the space between the edges being filled  
“ up with composition. The plates are fixed in a vertical  
“ position, and form the grinding mill.”



“In forming my seed-crushing mills I make use of the iron rolls ordinarily adopted, but instead of having one roll pressing and turning on the driving or crushing wheel, I use two, or three, or more, and by this means diminishing greatly the friction on the bearing of the driving roll. Both the grinding mill and crushing mill may be mounted upon and driven from the same axle, from which also, by means of pulleys and bands or other gear, I drive the feed roller of the crusher, and also an oil-cake breaker placed under the main driving pulley. On the outside of the driving roll of the crusher a plate is fixed, which revolves with the driving roll, and another plate is set up with a screw, and this forms a bean-splitting machine, the plates of the machine being formed with the splitting surfaces similar to the grinding plates, the space between each rib being wider. The oil-cake breaker I form with double action, so that cakes may be entered from both sides at the same time.”

[Printed, 4d. No Drawings.]

A.D. 1860, December 11.—No. 3034.

CANU, ADOLPHE JOSEPH.—(*Provisional protection only.*)—This invention relates to the construction of a machine designed for grinding or pulverizing and bruising, 1st, various hard substances, such as stone, coal, emery, glass, and other hard and dry matters requiring to be ground previous to use. 2nd. Bruising soft matters, dry or otherwise, such as corn, maize, oats, and other kinds of grain and seeds, fruits used in making liquors, beetroot, &c.

The machine performs the grinding or bruising process by means of a number of cylinders placed in radial position upon a revolving plate, the cylinders and plate being (as stated) placed in a case hermetically closed, which serves as frame to the machine, and the construction of which may be varied. On this case or box is placed a pipe, having a valve for the introduction of the matters to be operated on. The cylinders (the number of which may be varied) are suspended and turn on a plate, also revolving, and of which the exterior exceeds that of the cylinders, so that the latter act on the plate with the whole of their lower surface, being placed in order round the centre of the plate.

“ The speed of the cylinders, all of which turn in the same direction, is variable, as well as that of the plate, according to the nature of the matters to be pulverised or bruised. The rotary movement of the cylinders may be communicated either by endless bands or gearing, or by means of friction pullies. The matters are introduced by means of the pipe above mentioned to the revolving plate, which by its rapid motion continually forces the matters placed above to pass between the lower face of the cylinders and the upper face of the plate, which may be raised or lowered by means of a screw, so as to leave the space required for grinding or bruising the matters, according to the degree to which they are to be reduced.”

The ground or bruised substances are received in a receptacle beneath the machine, and may thence be removed either mechanically or otherwise.

[Printed, 4d. No Drawings.]

A.D. 1860, December 18.—No. 3107.

MAC ARTHUR, RICHARD WAUGH.—(*A communication from Thomas Sutherland.*)—This is an invention of two machines respectively designed, one for hulling and dressing, and the other for dressing and polishing rice and other grain, and which in respect to hulling and dressing, is effected by means of a stone roller or cylinder revolving concentrically within a wire gauze cylindrical casing from 350 to 450 times per minute. The casing is of such larger dimensions, that a narrow annular intervening space, one quarter of an inch broad, through which the rice passes, is left between them. The stone cylinder is horizontally disposed, with its axis resting in suitable bearings mounted on the machine frame, to which also the open ends of the casing are fixed by long bolts. When the stone cylinder and casing are parallel throughout, they are placed somewhat higher at one end than the other, but when they have by preference a tapering form, it is then unnecessary, as there is a natural inclination from the small end where the grain is fed into the casing from a hopper, to the largest end where the grain is delivered, either into a second machine of similar construction beneath, or into an inclining trough, which conducts it to the finishing process.

The polishing machine “consists of two flat surfaces of wood  
 “or other suitable material, the lower one or bottom being fixed  
 “with two sides, and placed at an angle of 45 degrees. The  
 “top or working part works up and down by means of a  
 “crank and two small sides, and is kept true to its place by the  
 “sides of the lower part, which is stationary. The two surfaces  
 “of the upper or moving part, and under or fixed part of the  
 “polishing machine which thus come in contact, are padded  
 “and covered with buff leather. The top or sliding part is  
 “caused to move up and down about one hundred and fifty  
 “times per minute, and the rice or grain passing between  
 “the two surfaces of buff leather, as above described becomes  
 “finely polished, and from the polishing machine is passed  
 “into the screening and fanning apparatus, from which it is  
 “delivered fit for market.”

[Printed, 1s. 2d. Drawings.]

A.D. 1860, December 29.—No. 3190.

VILCOQ, LAURENT CHARLES MARIE JOSEPH.—This invention relating to the construction of machinery designed for grinding or triturating vegetable and fibrous matters and substances, consists as described by the inventor “of a drum preferably  
 “of cast iron which has its outer surface serrated or fluted,  
 “the size, depth, direction, or rake of the flutings being  
 “governed by the speed at which the drum is driven. This  
 “drum rotates in bearings of the usual description, and is  
 “driven by any motive power by means of pullies or gear on  
 “its shaft. Beneath this drum is placed an apparatus formed  
 “of small plates placed one against the other, and serrated on  
 “the upper surface, forming a segmental arc nearly concentric  
 “with the drum. The extremity of each plate is supported  
 “by means of a link chain, and balanced by weights passing  
 “over pullies fixed to the frame of the machine. Each plate  
 “has projections on its extremities, which fit into corresponding notches in the said chain. The object obtained by  
 “the suspension of this serrated segment is the regulation of  
 “the space between it and the exterior of the drum, so that  
 “the teeth, flutings, or projections may never come in contact. The fibrous or vegetable matters to be ground are  
 “introduced on the one side of the drum by means of an  
 “endless band travelling on rollers. Another small serrated

“ segment surrounds the drum at the point where the  
“ materials are received, and the segment is arranged so that  
“ the one end turns on a hinge, thus allowing the other to be  
“ more or less opened; a vibratory motion is given to this  
“ last segment by means of an excentric or cam on the axle.  
“ To facilitate the action of the machine on the plants, I  
“ place it in a tank of water.”

[Printed, 8d. Drawing.]

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A.D. 1861, January 25.—No. 199.

HUGHES, EDWARD THOMAS.—(*A communication from Messieurs Leon and Edouard Pavin de Lafarge.*)—This invention relates to the construction of machinery designed primarily for grinding or pulverizing earth or clay preparatory to making therefrom, bricks, tiles, and other articles of earthenware, and which machinery (it is stated) is applicable to the grinding or pulverizing of grain, stones of fruit, and to similar purposes.

The machine or apparatus is described as consisting “ of a  
“ strong framework of wood or metal standing in a vertical  
“ position, at the top of which is fixed a receiver and hopper  
“ to receive the material to be crushed. Inside this frame is  
“ a number of revolving blades or cutters, which bruise or  
“ crush the material into coarse pieces, and then allows them  
“ to fall to another set of blades or crushers, but of a finer  
“ description; for some kinds of material and for most pur-  
“ poses these two processes will be sufficient; but if not, one  
“ or more of a finer description may be added, the pulverised  
“ material falling through the last into a receiver ready for  
“ use. The revolving blades or cutters are turned by power  
“ by passing a shaft through the apparatus and fixing on the  
“ ends projecting outside the necessary drums or pulleys;  
“ the said shafts may all be turned at the same speed or  
“ varied at discretion.”

[Printed, 1s. 2d. Drawings.]



A.D. 1861, March 27.—No. 763.

SPENCE, WILLIAM. — (*A communication from Louis Wells Broadwell.*)—This invention relating to the process of furrowing the grinding surfaces of millstones, has for its object the arranging and forming the furrows in curves “so combined as “to work in harmony with the centrifugal and centripetal or “natural forces produced by rotary motion.” The prepared face of the stone is first divided into 12 or more equal divisions by straight diametrical lines which intersect the center, and from these lines the curved furrows are set out by means of a “schablone” or curved rule, by marking round which when it is placed in position against the straight lines, the size, shape and position of the major furrow of each division will be indicated on the face of the stone. The curves for the intermediate furrows are obtained by placing one end of the schablone against the major furrow of each division, the furrows being cut to the curves thus marked, shallow near the eye of the stone and increasing slightly but gradually in depth towards the periphery. “They are also made slightly “inclined on the back or convex side, and brought up on an “inclined plane to a feather edge on the front or concave “side. The draught of the dress or forward inclination of “the furrows from a straight line drawn through the center “of the stone is proportioned to the speed with which the “stone revolves. Both the runner and the bedstone are “dressed alike, but when the former is turned over and “placed in the position for grinding, then its dress assumes “a reversed position in relation to that of the bedstone. In “some cases the ordinary surface dress is used, but in other “cases the grinding surfaces are filled with numerous “parallel grooves as narrow and close together as they can “be made.”

[Printed, 10d. Drawing.]

A.D. 1861, April 1.—No. 806.

PALMER, WILLIAM. — (*Provisional protection only.*) — This invention relating to the process of grinding grain, refers to a mode of so arranging the mill, that (it is stated) the delivery of the grain from the center of the bedstone to the grinding surface of the stones is immediately effected, the center of the



bedstone being kept free, and the furrows of the stone open at the center. This (it is stated) "is done either by screwing  
" flanges to the old rinds already in use, or by adopting new  
" ones, the flanges or wipers being placed so far behind the  
" centre, that they at once, by means of the centrifugal force  
" or speed of the runner, bring the grain to the grinding  
" surface, whilst they run so close to the bedstone that no  
" grain is left to interfere with the draught of the stones."

[Printed, 4d. No Drawings.]

A.D. 1861, April 3.—No. 818.

WILSON, THOMAS EDWARD.—(*Provisional protection only.*)—This invention relates to the constructional details of agricultural machines and to the rollers of grinding or crushing apparatus.

The first part is applicable to those machines in which a reciprocating or to-and-fro motion is required, and "consists  
" in making a cam or cams with two or more projections to  
" work against two points of contact in connection with the  
" frame or slide that has to be moved to and fro. These  
" points of contact are on opposite sides of the axis of the cam  
" or cams. A projection on one of the axis of the cam or  
" cams will push the frame or slide that has to be moved one  
" way, and a projection on the other side will push it back  
" again, and so on continuously; they will act whichever  
" way the cams rotate. The advantages are that less power  
" will be required and the wear and tear will not be so much  
" as when ordinarily constructed."

The second part is applicable to roller grinding machines, and "consists in making the rollers between which the substances are ground or crushed, one with right and the other with left hand threads or grooves, so as to produce a  
" wrenching motion."

[Printed, 4d. No Drawings.]

A.D. 1861, April 4.—No. 832.

NEWTON, ALFRED VINCENT.—(*A communication from George Clark, Peter Elting, George Marsh, and Alfred Marsh.*)—The object of this invention is to obtain a simple and efficient machine called a "bran duster" for thoroughly separating

flour from bran, so that none be allowed to escape therewith and all the flour that a given quantity of wheat will yield may in a pure state be recovered, and the bran thoroughly cleansed without breaking it into particles so fine as to create a risk of their escaping with the flour, which would be the case if the scouring operation is too severe. To avoid such a contingency, and at the same time effectually detach all the flour, it is proposed to employ stationary brushes and one or more revolving disc screens in combination with a revolving fan, whereby the bran while under the treatment of the fixed brushes, is discharged from the screens without being unduly acted upon, whilst a thorough separation from it of the flour is effected.

[Printed, 1s. Drawings.]

A.D. 1861, April 9.—No. 865.

DAVIES, GEORGE.—(*A communication from Pierre Joseph Morrisseau.*)—This invention relates to the process of dressing and furrowing of millstones mechanically. The machine designed and employed for this purpose works (it is stated) with great regularity, cuts the furrows with great precision and to any depth, and leaves nothing to be desired. Whilst working it rests upon the stone, and maintains by its own "weight, the position in which it is placed, to dress any section of the grinding surface. The tool holder is capable of carrying the tool in direct lines, and the force with which the tool strikes is regulated by the attendant, who can not only move the tool to any point and cause it to cut to the depth required, but he can also cause it to dwell and operate as long as may be required on any particular place. The dust produced by the operation is constantly blown away by a small bellows after each stroke of the tool as the latter is rising. The upward movement of the tool is effected by a cam or tappet.

[Printed, 10d. Drawings.]

A.D. 1861, April 20.—No. 980.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Joseph Perrigault.*)—This invention relating to the working of mills adapted to the grinding of corn and other grain, consists in the means employed for ascertaining and regu-

lating the intensity of the air current passing between the grinding surfaces of millstones for the purpose of keeping them cool, and also to a method of collecting the loose flour or mill-dust that is carried away by the air current, after it has passed between the stones. The air (it is stated) "is  
" admitted through a tube which forms a continuation upwards of the eye of the stone. This tube terminates on a  
" level with the drum in which the stones are enclosed.  
" The flour and other material after being ground pass  
" through a shoot provided with a leather or other flap valve  
" opening outwards only into another shoot or pipe fitted  
" with a similar valve, or into a receiver. A passage leads  
" from the upper part of the drum, and communicates  
" through a flexible tube with a similar passage fitted with  
" a slide valve or damper, and opening into a chamber which  
" itself opens into another chamber or passage, in the end of  
" which a fan is fitted; the outlet from the fan is into a box  
" or chamber fitted with partitions in such manner as to  
" cause the air and matters driven by the fan to traverse the  
" box in a zig-zag direction before issuing directly into a  
" pipe leading to the outside of the mill, or through a perforated plate or other like filter at the further end thereof.  
" A syphon tube with liquid in the bend or other gauge is  
" fitted to the upper part of the drum. The chambers, passages, and boxes, are formed with a jacket in order to  
" their being heated, should circumstances render heat  
" necessary to prevent condensation on the inner surfaces  
" thereof."

[Printed, 8d. Drawing.]

A.D., 1861, May 16.—No. 1247.

STEVENS, CHARLES.—(*A communication from Jean Ellie.*)—This invention (more hypothetical than practical) relates to an apparatus designed for actuating grinding mills, and whereby (it is stated) increase of power is obtained, a saving in construction effected, and the mill not being dependent upon either wind or water, may be placed in any suitable locality. The motive power is to be obtained from a wheel similar in construction to an overshot water wheel, but which, instead of being worked by the weight of a fall of water, is caused to rotate by the weight of shot or granulated metal, to be

raised from a receptacle beneath the wheel by means of an endless chain of buckets, that deposit it upon an inclining shoot or receptacle above the wheel, and thence it slides down and falling into the buckets of the wheel, sets it in continuous motion. The endless chain of buckets is to be worked either by manual labour or by horse power, each bucket connected to the chain carrying up, one following another in succession, a load of shot or other granulated metallic substance.

[Printed, 4d. No Drawings.]

A.D. 1861, June 6.—No. 1423.

MOORE, SAMPSON.—This invention, relating to the construction of a mill and apparatus designed for the process of dressing and finishing rice at one operation, consists in:—

1st. A compound conical dressing and polishing mill, which may be either vertical, diagonal, or horizontal, its upper end, which is fixed on a shaft, having the form of the frustum of a cone, clothed with sheepskin or other suitable rubbing material, and revolving within a casing of corresponding shape, formed partly by any number of stones. This casing is circumposed, the intermediate spaces being filled up or covered with wire gauze or perforated metal, through which the dust escapes and the air is admitted to keep the apparatus cool, so that gumming or fouling of the stones may be prevented. The lower part or section of the mill is fitted on a tube, which revolves on the shaft of the upper section, and has the same form, is also clothed with sheepskin, fastened on in a peculiar manner, and is inclosed by a casing of wire gauze. After the rice has been dressed in the upper section, it falls into the lower section, where it is polished.

2nd. Relates to the apparatus or means employed for adjusting the cones to the interior of their respective casings, and also to the mode of adjusting the stones, which in part form the casing of the dressing section.

3rd. Employing felt and “gunney bags” as a substitute for sheepskin in the process of dressing and polishing rice.

4th. Relates to the construction of a mill intended only for the process of dressing rice. This mill is a counterpart of the upper section of the combined apparatus described in the first part of the invention.

[Printed, 10d. Drawing.]



A.D. 1861, June 11.—No. 1488.

STEVENS, CHARLES.—(*A communication from Adolphe Joseph Camu.*)—This invention relates to the construction of a machine adapted to pulverize or crush various matter, such as stones of all kinds, ores, coal, emery, crystals, glass, sandstone, phosphate of lime, guano, earths used for colours, chemical products, white lead, and porcelaine clay, and it may (as stated) be advantageously employed for crushing dry or soft matters, such as corn, maize, fruits, beetroot, and other similar substances.

The machine as described “ consists of a plate of ironstone or  
“ other hard suitable substance, to which a rotary movement  
“ is given, and which serves as a bottom grinding stone, above  
“ which an indefinite number of cylinders of iron or other  
“ hard substance are made to turn; the cylinders can be  
“ placed at any given distance from the plate by means of  
“ adjusting screws, thus enabling the matters to be broken  
“ up or powdered to the fineness required; the number of  
“ cylinders, their diameter, as well as that of the plate, must  
“ vary according to the purposes for which the machine is  
“ intended. The cylinders and also the plate may be grooved,  
“ roughened, or not. Motion is communicated to the plate  
“ and cylinders by ordinary gearwork; the cylinders all turn  
“ in the same direction; the plate is of sufficient diameter as  
“ to pass beyond the cylinders which turn above it. The  
“ rapidity at which the plate and cylinders are made to  
“ revolve must also be subject to the materials the machine  
“ has to act on. The plate and cylinders are enclosed in a  
“ case, which serves at the same time as frame to the ma-  
“ chine; the case is furnished with a trap for the introduction  
“ of the matters which, when broken up or powdered, pass  
“ into a receptacle placed beneath the machine, whence they  
“ are withdrawn by an endless chain of buckets or other-  
“ wise.”

[Printed, 10d. Drawing.]

A.D. 1861, June 12.—No. 1513.

GIRARD, JEAN PIERRE.—(*Provisional protection only.*)—This invention relates to the construction of a hand mill adapted to the grinding of coffee. The mill (as stated by the inventor)  
“ is fixed on a box furnished with a drawer for receiving the



“ coffee when ground, and having an upright board which  
“ forms the back of the apparatus. The coffee is first placed  
“ in a funnel-shaped receptacle of sheet iron or other suitable  
“ material, and on turning a handle a toothed grinder of cast  
“ iron is made to gear with the teeth of a core, also of iron.  
“ The grinder is fixed to the upright board above mentioned  
“ by two bolts or pins furnished with nut screws. The mill  
“ is regulated by means of a thumbscrew, and the teeth of  
“ the grinder and those of the core are so arranged as never  
“ to rub against each other, whereby the mechanism is pre-  
“ served from all injury. A great advantage in point of con-  
“ venience is obtained with this mill, as being fixed on a box  
“ it can be moved without difficulty from one place to another,  
“ and is always ready for working, whereas those in ordinary  
“ employment require to be fixed in some way before they  
“ can be used. On leaving the core the ground coffee passes  
“ into the drawer above-mentioned, situated in the box on  
“ which the mill is mounted.”

[Printed, 4d. No Drawings.]

A.D. 1861, June 18.—No. 1562.

GIBSON, ANDREW WHITE.—This invention relating to the construction of mills for grinding or treating barley or rice, is supplementary to a prior invention, for which Letters Patent dated April 28, 1854, No. 962, were granted to the above inventor. The mill itself is an ordinary vertical mill, the running stone being carried on a horizontal shaft, within a case which, in relation to the stone, revolves at a reduced velocity. The invention refers otherwise 'chiefly to the contrivances adopted for regulating the quantity of grain fed to or about the centre of the stone from a hopper, and also to the apparatus employed for discharging intermittently from the casing, the grain or substance under operation, and which, after it has passed through the mill in a stated time regulated by the apparatus, falls into a sifter, that separates the dust and other impurities from the grain, which falls into a suitable receiver, the dust and other useless matters being conveyed into another receptacle. The sifter is suspended by rods, and the requisite rapid shaking motion is imparted to it by a light connecting rod which is coupled to the throw of a small crank.

[Printed, 8d. Drawing.]

A.D. 1861, July 3.—No. 1690.

DAVIES, GEORGE.—(*A communication from Charles Placide Nézeraux.*)—This invention relating to the construction of apparatus adapted to the grinding of corn and other substances, consists in:—

1st. Employing a nether stone or bed embracing only a fourth part of the circumference of the moving stone, one of the extremities being about opposite to the horizontal radius of the circular stone, and the other extremity being about opposite to the lower vertical radius of the same."

2nd. "So mounting the bed stone that it can be rocked or oscillated on its points of support in order to facilitate the dressing or setting of the same, and in forming any numbers of inclined transverse grooves therein (three being preferred)."

3rd. "The use of pedestals (for carrying the circular or revolving stone) capable of moving on slides fixed at an angle of about forty-five degrees, so that as the circular stone is set to or from the bed, it moves on a line passing through the centre of the curve of the latter."

4th. "The employment of a small trough or spout (to feed the grain to the mill), to which an alternate circular or rectilinear motion is given in order to distribute the grain more evenly between the surfaces of the stones."

The following advantages are stated to be gained by this system of working; viz., a saving of 50 per cent. of power; a continuous cooling of the grinding surfaces and no evaporation; the production of superior flour dry and spongy; and a simple and facile mode of dressing the surfaces.

[Printed, 8d. Drawing.]

A.D. 1861, July 15.—No. 1779.

JOHNSON, JOHN HENRY.—(*A communication from Henry Beaufort Sears.*)—This invention relates to the construction of a machine for dressing or cleaning rice, the chief feature of which consists in forming the cylinder of the machine with pieces of stone or stone segments circumposed at equal distances, and in closing the spaces between the stone segments with either wire gauze or perforated sheet metal, which may be let into the contiguous ends of the segments and form

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chambers for the escape of the meal, which having passed through the gauze or the perforations in the plates, is conveyed to proper receptacles by means of tubes or spouts. The cylinder is stationary, but within it there is placed a suitable drum or beater which revolves on its axis. Applied to the drum externally is a number of overlapping strips of sheepskin in combination with a series of drags or scrapers, hinged or jointed to its surface, so that when the drum rotates they are caused centrifugally to extend and rub against the interior of the cylinder, thereby removing any coagulated or other matter deposited thereon.

[Printed, 6d. Drawing.]

A.D. 1861, August 2.—No. 1922.

NEWTON, WILLIAM EDWARD.—(*A communication from Amasa Howe.*)—This invention relates to the construction of machinery designed for cleaning rice, coffee, and other grain or seed after the hulling process, simply by means of a deep threaded screw or spiral revolving concentrically in a cylinder, into which the grain is fed from a hopper. The two first turns of the thread or spiral on the screw shaft project radially so as nearly to touch the inside of the cylinder, but beyond throughout the main length of the screw the diameter is diminished. On the plain end of the screw shaft projecting beyond the delivery end of the cylinder, there is a spiral spring which presses a flange against and so tends to close the open or delivery end of the cylinder, and by this means the grains of rice are compacted or pressed together by the action of the screw, which revolves at the rate of 500 or 600 revolutions per minute. By degrees the rice or grain is moved towards the delivery end of the cylinder by the pressure caused by the screw, and which forces back the flanged cover so that the finished rice can escape. By means of the active friction or rubbing of the grains together, under pressure, which may be regulated, the inner skin or pellicle is removed or scoured off, and by an after process is separated from the cleaned rice.

[Printed, 8d. Drawing.]

A.D. 1861, August 17.—No. 2051.

HART, PLEASANT.—(*Provisional protection only.*)—The object of this invention relating to the process of grinding grain, is



to save power, and reduce the expense of dressing the mill-stones.

It is stated that these results are obtained by dressing in any approved manner, the surface of only the running stone, whilst the surface of the bed or stationary stone is left plain and unfurrowed. The inventor says:—"I have found that dressing the face of both stones deteriorates the grinding action of the mill, and is not required to facilitate the discharge of the ground substance from between the stones."

[Printed, 4d. No Drawings.]

A.D. 1861, August 23.—No. 2107.

CHILDS, AUGUSTUS BRYANT.—(*A communication from David Munroe Childs.*)—This invention relates to a mode of dressing or "cracking" millstones with diamond cutters instead of with the ordinary pick or bill. Preparatory to the process, the surface of the stone is cleansed with a composition consisting of  $\frac{1}{4}$  lb. of saltpetre,  $\frac{1}{4}$  lb. of tartaric acid,  $\frac{1}{4}$  lb. of common salt, dissolved in 1 gallon of vinegar. After cleaning, the surface is polished with a mixture of pipe clay and emery, and the furrows are planed out as true as possible, the main furrows running straight to the circumference in direct lines tangent to the eye of the stone. The tool employed is somewhat similar to a glazier's diamond, but instead of having only one cutting point, it carries three or four. This tool is drawn over the stone either by hand or mechanically with sufficient pressure to cut deep scratches or "cracks" in the polished surface between the furrows; round the eye for a certain distance the scratches run in concentric circles, and beyond they run parallel with the minor furrows and terminate at the circumference, and the edges of the furrows are also cut clean, sharp, and distinct with a diamond cutter before they are sunk below the surface, which may also be effected by repeated applications of the diamonds. It is stated that the sharp edges of the cracks shave or cut up the grain, and the flour comes from the stones with all its nutrition; much less power is required for grinding with stones prepared or dressed according to the invention, and the flour produced is of superior quality.

[Printed, 6d. Drawing.]

A.D. 1861, August 29.—No. 2148.

CORBETT, SAMUEL.—This invention relating to the constructional details and arrangements of mills adapted to grind, by means of cast steel or chilled iron grinding surfaces, mineral and vegetable substances, and to hull or shell beans, oats, and other grain and seed, consists in:—

1st. "Fixing the revolving, grinding, or cutting plates on the spindles of mills for crushing and grinding mineral and vegetable substances, and for hulling or shelling beans and oats, and [other grain and seeds, that is to say, fixing on the said spindles a truly turned cast-iron block, to which block the revolving plate is secured by screws and nuts, or in any other convenient way, the said block permitting the revolving plate to be easily removed and accurately replaced on the spindle at a small expense in case of wear or accident."

2nd. "Fixing the fast or stationary grinding or cutting plates of mills for crushing and grinding mineral and vegetable substances, and for hulling or shelling beans and oats, and other grain and seeds, that is to say, fixing the fast or stationary grinding or cutting plate by screws and nuts or otherwise to a frame or bracket secured to the mill frame, the said fast or stationary plate being capable of being readily removed and replaced in case of wear or accident."

3rd. "Adjusting the distance between the revolving and fast grinding or cutting plates by means of screw or lock nuts."

4th. "Making the revolving plate or surface capable of yielding when nails or other hard substances are accidentally introduced between the grinding or cutting plates of the mill."

5th. Feeding the grain to the grinding surfaces from a hopper by means of a shaking spout, the quantity passing from the hopper being regulated by a slide.

6th. Relates to forming the furrows and intermediate ridges on the grinding surfaces without cutting edges and in curves so arranged, that when in operation, the curved furrows of one surface, cross or intersect the curved furrows of the other.

[Printed, 8d. Drawing.]



A.D. 1861, August 29.—No. 2153.

NEWTON, ALFRED VINCENT.—(*A communication from Albert Hubbell Wright.*)—This invention relates to that kind of rice and other grain-cleaning machines in which, by means of a revolving spiral vane or blades inclining helically, the grain is so kept in constant motion, that the process of cleaning is effected by the friction with which the grains are caused to rub against and past each other. It consists in:—

1st. So arranging and connecting two cylinders, one horizontally and the other vertically, by means of an elbow cylinder of the same diameter, that by means of a spiral vane fixed on a shaft that revolves concentrically in the horizontal cylinder, and helical blades on a shaft that rotates in the vertical cylinder, a constant movement and scrubbing together of the grain as it passes through and from the horizontal cylinder to the vertical cylinder, is kept up under its own pressure as it rises in the vertical cylinder, and thence falling over the top is conducted again into the hopper which communicates with and feeds the horizontal cylinder, and by this means a constant circulation of the grain is kept up, the horizontal shaft being driven by strap pulleys, and transmitting motion to the vertical shaft by means of an intermediate shaft and bevel gearing.

The hopper is divided by a partition into two compartments, between either of which communication with the horizontal cylinder is readily opened by means of slides.

[Printed, 10d. Drawing.]

A.D. 1861, September 26.—No. 2403.

CALDWELL, GEORGE, and YOUNG, JOHN.—(*Provisional protection only.*)—This invention of apparatus designed for dressing flour, is concisely stated by the inventor to consist "in combining with the well-known silk dressing machine a fan or other blowing apparatus, arranged so as to pass a blast or current of air against or through the silk sieve or dressing material, whereby the flour is cooled and a greater quantity and of a superior quality is obtained from the same wheat than by apparatus hitherto in use."

The invention is (stated to be) also applicable to dressing apparatus, the sieve or dressing material being in such case made of wire or otherwise.

[Printed, 4d. No Drawings.]

A.D. 1861, October 12.—No. 2555.

NEWTON, ALFRED VINCENT.—(*A communication from Samuel Bentz.*)—This invention relating to an arrangement of machinery for effecting (it is stated) on an extensive scale and inexpensive manner, the removal of the outer coat from “or unbranning” wheat or other grain preparatory to grinding, is supplementary to a prior invention, for which Letters Patent dated August 22, 1848, No. 12,254, were obtained on behalf of the inventor by this patentee.

The main feature of the present invention more especially relates to the manner in which the several apparatus are separately disposed, in order that in passing from one part of the process to the next and so on in succession, the gravitation of the grain may avail for causing its progress from one machine to another, and to this end, the several apparatus are disposed on the floors of a building, the process commencing on the upper floor by a screen, which separates from the grain all extraneous matter larger than wheat, assuming that to be the kind of grain in operation. The grain is then passed through water in a cylinder, by means of a spiral vane, and thence in a damp state it falls into the cylinder of what is called an “unbranner” on the floor below. From the first unbranning machine it passes into a second machine of similar construction, the bran already detached being on its passage between the two machines drawn away by the suction of an exhauster. Having been operated upon by the second unbranner, the bran is again abstracted whilst the grain is conducted down a spout to be dried in the next floor beneath, in a series of metal troughs, furnished with spiral vanes and so placed, that the grain is caused to pass from one to another in succession, the vanes keeping it in constant motion, and all parts of it exposed to the heated atmosphere of the room. After the drying operation, the grain is polished in a machine of the same construction as the unbranners, but less friction is required. The grain being now in a heated state is cooled by a current of cold air whilst it gravitates down a series of cooling shafts, fitted with wirework frames so disposed as to form a series of zig-zag inclines, the grain being raised from one shaft to another in succession by an endless chain of buckets. The grain is now ready for either grinding or storing.

[Printed, 1s. 4d. Drawings.]

A.D. 1861, October 17.—No. 2582.

DEPLANQUE, LOUIS ALEXANDRE JOSEPH.—(*Provisional protection not allowed.*)—From the description given in the Provisional Specification of this invention relating to apparatus designed for “decorticating corn and seeds,” its precise nature in the absence of any drawings, is not readily defined.

The following is an abstract:—The corn having been wetted preparatory to the process is “brought by the pipe of  
“the cylinder decorticator fixed upon an axis which receives  
“its movement through a pulley; the arms of pig iron serving  
“to fix upon the tree the longitudinal plates chased in  
“the agitator, which serves to complete the work of the  
“cylinder.”

“Small rakes fixed upon the iron cheek of the decorticator  
“compels the corn or seed to pass through holes correspond-  
“ing to follow the exterior contour of plates chased and  
“pierced so as to produce the decortication. This disposition  
“of rakes renders it unnecessary to arrange the introduction of  
“corn, because the more quickly the cylinder turns a larger  
“quantity of corn is passed into the decorticator.”

The decorticator appears to be a perforated cylinder, furnished with small rakes or blades, and revolving within a “superior drum” made in two longitudinal halves hinged together, and in part pierced to correspond with the cylinder. A current of air “takes off from the grain the last husk which  
“cannot pass through the cylinder.”

[Printed, 4d. No Drawings.]

A.D. 1861, October 29.—No. 2710.

GIBBON, RICHARD.—This invention relating to a combination of contrivances for separating, dressing, crushing, weighing, and valuing malt and barley, has for its object the crushing of all the grains equally whatever be their relative sizes, and thereby avoid powdering large grains, whilst at the same time the smaller grains are not allowed to escape.

The process commences by passing the grain through a hopper, whence it falls regulated by a feed roller upon two screens in a shaking frame. Thence it is conveyed by a spout to a series of three sieves, respectively differing in fineness and placed in an inclining position one above another. These



sieves divide the bulk into samples of different qualities, a gentle air blast directed upon the grain as it falls upon the screens, carries off dust and impurities, and the stones and rootlets are separated from the grain, which is delivered by the sieves respectively into separate hoppers beneath, which guide it upon three pairs of crushing rollers respectively adjusted or set to operate upon the three different samples separately. These have relatively a different value according to weight per bushel, to ascertain which an adjustable balance similar to a steelyard is employed, and tables of weights and relative values per bushel, are given in the Specification.

An apparatus for raising grain to higher levels, by means of an endless chain of tin or wooden buckets is described, "back-lash" of the gearing which drives the crushing rollers is prevented by wedges or screws, and the rollers which revolve at different speeds, are made of cast-iron chilled.

[Printed, 1s. Drawings.]

A.D. 1861, November 25.—No. 2960.

JOHNSON, JOHN HENRY.—(*A communication from Wellington Lee.*)—This invention relates to the constructional arrangements of machinery which, although intended more especially for shelling or hulling and cleaning rice, is also applicable to the treatment of wheat and other grain.

According to the description furnished by the patentee, it is proposed to employ two horizontal surfaces, one rotating in close proximity to the other, which is stationary. "The rotating surface is intended to be covered with india-rubber, gutta percha, or other equivalent material, and the stationary surface is composed of stone; provision is made for adjusting the distance between these two surfaces so as to suit the grains of different sizes. The grain to be treated may be introduced between the rubbing surfaces from above through an aperture in the upper rubbing surface, or in any other convenient manner, and the two surfaces are surrounded at proper distances with a perforated plate or wire gauze for the purpose of withdrawing the dust or meal produced by the passage of grain through the apparatus."

The grain fed into the apparatus is dispersed centrifugally by a cone, and for the purpose of keeping the rotating stone and its india-rubber or other covering cool, a blast of air is directed between the rubbing surfaces, and if the surface of the india-rubber be roughened, it is found to hold the rice longer than if left smooth, which (it is stated) answers very well, although a rough surface is more efficient.

[Printed, 8d. Drawing.]

A.D. 1861, December 4.—No. 3042.

KENNEDY, ROBERT, and ARMSTRONG, JAMES. — This invention relates to preventing the wear and noise of what is known as "back-lash" in driving and other gear, and to applying the invention to grinding mills.

Back-lash is said to occur when the teeth of pairs of bevel or spur wheels engaged together, make an unusual rattling noise, which is caused by the wheel which is driven over running the speed of the wheel which drives, and the prevention of this according to the invention, is effected by the use of endless straps or bands, which run upon pulleys fixed one on each of the shafts which carry the wheels, there being in the case of a pair of bevel wheels, intermediate loose pulleys free to rotate on fixed studs or axles set at a suitable angle for changing to the required direction, the onward motion of the running strap.

"For spur gearing, an additional wheel of any convenient size is geared into the driving wheel, and on the opposite side to that where the driven wheel is placed. On the shaft of this additional wheel is a pulley arranged to receive a belt, which passes to a pulley on the driven shaft; this pulley on the driven shaft being made the least thing larger than the speed required, keeps the cogs of the additional wheel close up to those of the driving wheel, and no room is left for back lash, the belt around the two pulleys acting as a break without loss of power."

In adapting the invention to axles or spindles of grinding mills driven by ordinary gearing, the inventors say, "we pass a belt from a pulley on the spindle of the first driven pair over a double pulley on the spindle of the second pair, and so on in like manner we couple the spindles of all the remaining stones. We carry a strap to a pulley on a



" upright shaft or other gearing, on which (if necessary) a fly wheel to balance motion is mounted."

[Printed, 10d. Drawing.]

A.D. 1861, December 5.—No. 3049.

ROBERTSON, GEORGE WASHINGTON.—(*Provisional protection only*).—This invention of apparatus adapted to the process of cleaning rice and other grain, consists in (as stated by the inventor) "forming a conical basin of stone, and in fitting so as to revolve between the sides thereof a conical drum of such size as to allow of space between the basin and drum all round. I cover this drum with sheepskin felt, or other like yielding and soft material. I form apertures in the sides of the basin and insert wire gauze for the purpose of admitting air, and to allow of the *débris* and dirt from the grain passing through the same. Rotary motion is imparted to the drum and the basin, and the grain in passing through the machine becomes cleaned."

[Printed, 4d. No Drawings.]

A.D. 1861, December 20.—No. 3188.

SMITH, JOHN, the younger, and HIGGS, JOHN BIRCH.—This invention relating to auxiliary details applicable to thrashing machines and grinding mills, and to apparatus for raising or moving grain in granaries and other places, refers:—

1st. To "elevators" adapted to thrashing machines for raising the grain from one level to another, which is effected by an exhauster that acts by means of two or more fans which draw a strong current of air up a tube or passage, and the grain is blown or drawn up with it. The grain may also be moved horizontally or in a direction inclining therefrom, and the separation of the dust and small grains is effected at the same time.

2nd. To moving and shifting grain in granaries and store-houses also by means of an exhausting fan or fans, and similar means may be employed for raising grain or meal in connection with grinding mills; the grain or meal in all cases being carried along an inclined passage by a current of air produced by an exhausting fan or fans.

[Printed, 10d. Drawing.]

1862.

A.D. 1862, January 16.—No. 118.

**KNIGHT, JOHN ADAMS.**—(*A communication from John Dickinson.*)—This invention relates to the construction of apparatus designed for the purpose of dressing or furrowing millstones; by means of a diamond cutter or instrument in combination with what is termed a "double guide-way" "parallel rule," and the mechanical details connected therewith for guiding, operating, and steadying the instrument, there being two adjustable shields secured in a channel formed in the lower surface of the parallel rule to protect the setting of the diamond. A channel is formed for the parallel rule to rest upon by means of two raised ledges of metal secured to the under surface of the double guide-way. The diamond is held by a self-adjusting holder or protector, made with a knob or handle like an ordinary cutting tool, and the depth of the cut into the surface of the stone is effected by the compression of a spring regulated by an adjusting screw.

[Printed, sd. Drawing.]

A.D. 1862, January 23.—No. 174.

**ROPES, WILLIAM HOOPER.**—(*A communication from William Maxwell Greene.*)—This invention relating to the construction of coffee, rice, and other seed and grain-cleaning machines, as effect the process by causing the movement and attrition of the grains or berries against each other in a mortar or other receptacle, consists in:—

1st. Fitting centrally within the mortar a vertical shaft, which is kept in position by two bearings, one in the vessel and one above. This shaft carries propelling blades at its lower end, or a spiral vane which may extend upwards, and when the shaft is rotated by a strap passing round a pulley on its upper end, the blades or vane of the propeller force the grain downwards in the center of the mortar, and cause it to spread radially at the bottom and rise all round up the sides, and so keep filling up the central hollow at the surface as the grain is forced divergently from beneath.

2nd. Fitting in the center of the mortar, either attached to the bottom of the mortar or fixed on the lower end of the shaft to revolve therewith, a trumpet shaped boss, to cause the divergent spreading of the grain in all radial directions towards the sides.

3rd. Fitting to arms laterally projecting from the shaft, one or more scoops, to act on the surface of the grain and facilitate its constant movement towards the center.

4th. Making the mortar or receptacle either wholly or partly of stone, there being in all cases an opening at the bottom for discharging the grain after it has been sufficiently cleaned by the process, and means provided for effectually closing it whilst the apparatus is at work.

[Printed, 10d. Drawing.]

A.D. 1862, February 7.—No. 331.

BRINSMEAD, HENRY.—(*Provisional protection only.*)—The object of this invention is to simplify and effect simultaneously, either collectively or in part the operations of moving, elevating, awning, or "hummelling," chobbing (that is, removing the calyx or white coat from the kernel), cleaning and dressing grain, either in connection with thrashing machines or otherwise.

The apparatus employed for the combined processes consists of a rotary fan, furnished with a "chob cleaner and awner," on either one or both sides, the moving parts by preference being attached to the shaft or spindle which carries the fan, or to the fan blades or arms themselves. The fan is fed with air at one end or both sides by means of tubes communicating therewith, and into which the grain is introduced, and carried in at each side by the air current against a wire work diaphragm or perforated plate through which the air is drawn, the grain remaining in what is termed "the chob cleaner and awner" at the sides of the fan, and after it has been sufficiently acted upon it is thrown out centrifugally into pipes or spouts, by which it is conveyed to the proper receptacles. The current of air after performing its use in the machine may be employed as a winnowing blast in connection with thrashing machines, and thus save the necessity for providing a blast solely for that purpose.

[Printed, 4d. No Drawings.]



A.D. 1862, February 24.—No. 497.

SMITH, FREDERICK ST. GEORGE.—(*Partly a communication from Edward Furber.*)—This invention, relating to the construction of mills for grinding or reducing quartz, ores, bones, bark, grain, and other mineral, animal, and vegetable substances, is described by the patentee as follows:—

“ I take a cylindrical drum, by preference toothed on the inner surface, and mount arms on a spindle or axis made to revolve very rapidly inside the said drum by means of a strap and pulley on the outer end of the spindle, or by any other means of communicating motion. The material to be operated upon is fed through an opening in the side of the drum near the axis, and the revolving arms meeting the material when inside the drum, dash it by centrifugal action with great violence against the internal circumference of the drum, whereby the material is broken to pieces. At one portion of the circumference I place an exit pipe, through which the particles, when sufficiently reduced, are driven by the blast of wind caused by the revolving arms. The exit pipe opens into a large chamber, in which the ground material subsides, and in the event of the comminution being required of different degrees of fineness I make the said chamber of considerable length. The largest particles subsiding first and nearest to the entering end of the chamber, and so on down to the finest particles allows of the separation being easily effected.”

The arms are intended to revolve at the rate of from 1,000 to 1,800 times per minute.

[Printed, *sd.* Drawing.]

A.D. 1862, February 25.—No. 502.

PIDDINGTON, JOHN. — (*A communication from Melchior Nolden.*)—This is an invention of a machine constructed for the purpose of “shelling or husking all kinds of grain,” upon which it operates by means of a revolving wire brush, that rubs the grain as it lies upon a perforated metallic plate. The wire brush is formed on the under surface of a metal plate, the fixed ends of the pieces of wire being set in gypsum, with which the surface of the plate is covered. The feeding hopper is placed upon this plate surrounding the center,



through which the grain passes on to the perforated plate below. This latter plate is fixed to another plate or casting bolted to the framing and cast with arms, from which proceed a number of concentric rings with knife edges, and below at some distance is a cap-shaped receptacle for receiving the grain and the loose shells or husks. The vertical shaft to which, at its upper end, the rotating brush plate is fixed, is stepped in a bearing in the frame below, and by means of a strap pulley fixed on the shaft the necessary rotary movement is imparted to the brush.

[Printed, 4d. No Drawings.]

A.D. 1862, April 9.—No. 1018.

MAYS, WILLIAM.—(*Provisional protection only.*)—The object of this invention, relating to the construction of the working details of mills employed for grinding corn, grain, and other substances is to introduce a “spring griping arrangement” for the purpose of connecting the running stone to the mill spindle or driving gear. The cross piece (it is stated) “instead of fitting loosely between the cheeks, is made to bear against two moveable blocks, which project through the cheeks and are forced up against the cross pieces by means of strong springs. As a modification of this plan it will be evident that the same object, viz., a spring griping arrangement, may be effected by placing metallic or india-rubber spring blocks between the cross piece and the inner sides of the cheeks, the object of the invention being to make the griping arrangement elastic.”

“In order to conduct air down the eye of the stone, inclined flanges or guides are adapted to the eye block, so that as the runner rotates the air may be guided downwards in an oblique direction to the grinding surfaces below.”

[Printed, 4d. No Drawings.]

A.D. 1862, April 19.—No. 1143.

MUNN, WALTER, and BALLANTINE, DAVID, junior.—(*Provisional protection only.*)—This invention relates to the constructional arrangement of mills suited to grind, split, or shell seeds and other vegetable produce, and applicable generally to reduce other substances. This mill as described under one modifica-

tion" is supported on a framing of cast iron, forming a table  
 " on which the hopper and grinding apparatus is arranged;  
 " At the lower part of the framing and extending across it is  
 " fitted a horizontal stay piece, which forms a foot-step  
 " bearing for a central vertical shaft. This shaft passes up  
 " through the centre of the table, and its upper extremity  
 " revolves in a collar bearing fitted in the lower part of the  
 " hopper, the shaft passing through a box within which the  
 " grinding discs are arranged. There are two of these discs  
 " arranged horizontally and rotating one above the other;  
 " they are by preference formed of iron, with radial or other  
 " grooves in the working faces. The upper disc is fast to the  
 " central shaft, and the lower disc is carried on a tubular  
 " shaft which works outside the other. The central shaft is  
 " provided with the means of adjusting the distance of the  
 " discs one from another; this is done by means of a screw  
 " fitted at the lower end for raising or lowering the shaft.  
 " Motion is given to the main shaft from a driving shaft  
 " actuated either by hand or power; near the inner end of  
 " this shaft is fitted a bevel spur wheel which gives motion  
 " to a pinion on the vertical shaft. On the extremity of the  
 " driving shaft, and inside the main spur wheel, is a second  
 " bevel wheel which actuates the tubular shaft carrying the  
 " other grinding disc. It is preferred to actuate this disc  
 " at a lower speed than the upper one, and when required the  
 " shaft may be readily thrown out of gear by sliding the  
 " pinion up the feather formed on the tubular shaft. The  
 " materials to be ground are fed in through the hopper in  
 " the usual way, and pass down between the grinding discs,  
 " where they are subjected with more or less severity to the  
 " trituration action, according to the adjustment of the discs,  
 " which is suited to the material under operation."

[Printed, 4d. No Drawings.]

A.D. 1862; April 29.—No. 1253.

ROSS, JOHN. — (*A communication from Charles Ross.*)—The object of this invention, which relates to the constructional details of conical mills adapted to grind grain and other substances, is the peculiar construction of the outer fixed conical grinder or shell, within which the running stone of

the same configuration is mounted upon a horizontal shaft to revolve concentrically, and the chief feature of the invention consists in constructing or lining the fixed cone or shell with a number of pieces or segments of buhr or other suitable stone fitted and rigidly fixed together within a suitable frame or conical shell.

By this means (it is stated) a cheap hollow conical grinding surface may be easily produced, and made as efficient for grinding purposes as a stone of similar form in one piece. The conical frame or shell is fixed on a suitable framework, and with the pieces of stone lining fixed within, it constitutes the stationary grinding surface of the mill, the running stone having a corresponding form is solid and mounted concentrically inside upon the mill axis, to revolve therewith. The mode of fixing the stone lining pieces is described, as also a feeding contrivance which regulates the quantity of grain supplied from a hopper to the mill, by means of grooves cut aslant across the circumferential periphery of a broad collar formed on the mill shaft, which passes through the lower part of the hopper.

[Printed, 10d. Drawing.]

A.D. 1862, May 9.—No. 1391.

EDDINGTON, WILLIAM, junior.—(*Provisional protection only.*)—This invention of portable grinding corn-crushing, and chaff-cutting machinery, is stated to consist in:—

1st. "Fixing a grinding mill and a chaff cutter, with or  
" without an oat and bean crusher, on one framework  
" mounted on travelling wheels, and by means of suitable  
" gearing and clutches attached to the main driving shaft  
" either one machine or all may be worked at one time by  
" means of a band passing round a rigger fixed to the main  
" shaft, or any other suitable way of deriving the power from  
" an engine."

2nd. "So placing a lever to bear on the top of a spindle  
" fixed to or connected with the centre of the top running  
" stone that by applying a small weight or spring balance  
" to the longer end it may cause the top stone to press hard  
" on the lower one."

Printed, 4d. No Drawings.]

A.D. 1862, May 10.—No. 1409.

HOUSE, JAMES.—This invention relates to the constructional arrangement of machinery adapted to the crushing or reducing of grain, and a variety of other substances, for which purpose, the inventor proposes “to employ a pair of “ peculiarly constructed rollers, driven either at the same or “ different speeds in relation to each other by any suitable “ arrangement of gearing. These rollers may be either “ made in one or more parts, and composed of steel or chilled “ cast iron. In place of being cylindrical they are formed on “ their surfaces with a number of alternate V grooves and “ projections, the projections of one roller working into the “ grooves of the opposite roller. These grooves and projec- “ tions may be smooth on their outer surfaces, or they may “ have a series of teeth or notches formed on them with a “ view to the more effective reduction or disintegration of the “ substance under treatment. When these rollers are made “ in several parts, each part will consist of a disc, having “ its periphery bevelled on each side, so as to prevent a A or “ knife edge. By placing a number of these discs upon a “ square shaft, a roller of the description herein-before “ referred to will be obtained, each disc being formed with “ a series of teeth or notches on its bevelled edge, or made “ smooth as before described. In some cases it is proposed “ to use in combination with these rollers a feeding roller “ provided with a number of projecting pins or cups, as the “ case may be, such roller working at the bottom of a feeding “ hopper, and tending to feed the substance in a regular “ manner to the rollers, the feed rollers being driven by “ suitable gearing from the reducing rollers.”

It is also proposed to employ a vibrating screen to clean and sift the material as it leaves the rollers, and also a doctor to scrape and keep them free from clogging whilst at work.

[Printed, 8d. Drawing.]

A.D. 1862, June 24.—No. 1851.

CARR, THOMAS.—This invention relates to the construction of grinding machines known as edge runners, and adapted to grinding, kneading, washing, and similar processes. The pan



in which the runners on the horizontal shaft either roll on their periphery or revolve clear, is made to rotate by separate driving gear, so that the relative speed of the runners which rotate with the shaft, and of the pan, may be changed, the runners having the same liberty as in other machines to rise and adjust themselves to any hard substance beneath them.\*

In some cases the edge runners are so adjustably suspended, that there is no contact between them and the pan, and the distance apart of the two respectively can be regulated as may be required. The circumferential periphery of the runners may be fluted or otherwise furrowed, and knife edges or teeth slightly projecting may be inserted therein; also the means are supplied, by the aid of levers, weights, or springs, for increasing the grinding pressure of the running stones.

The machine (it is stated) is well adapted to such purposes as grinding to an impalpable powder a variety of substances; munching gorse and pulping roots; tempering clay and mortar; kneading dough and putty; washing fleshings and glue pieces, rags for paper, and hair for tanneries, which may be first washed and then pressed nearly dry.

The mill may also be adapted to the process of crushing ores, and a variety, of other mineral, earthy, and other substances.

[Printed, 3s. 6d. Drawings.]

A.D. 1862, June 25.—No. 1869.

TURNER, GEORGE.—This invention relates to the constructional details of machines designed for mincing meat and vegetables, and also applicable to the grinding of coffee and spice. It consists in applying to such machines of ordinary construction, a movable end plate to form a second bearing for the machine spindle. This plate is slotted for the two screws to pass through it by which it is secured to the casing of the machine, one screw being above and the other below. An aperture in the movable plate, allows the minced meat to pass out of the exit passage of the machine, the mince being forced in that direction in the ordinary manner by the action upon it of blades fixed on the revolving spindle. Mills for grinding coffee and spice may have fitted to them a similar *end plate*, which may carry the screw whereby the longitudinal

adjustment of the conical cutter can be regulated and on which depends the fineness or otherwise of the grinding.

[Printed, 10d. Drawing.]

A.D. 1862, July 31.—No. 2172.

RANSOM, JOSHUA, and RANSOM, EDWIN.—This invention relating to the working details of millstones, refers to a particular mode whereby the running stone is connected to the spindle in such manner, as to be capable of easy and convenient adjustment in regard to its parallelism with the other stone. For this purpose (it is stated) “the centre of  
“the mace which impels the runner is mortised to fit on the  
“head of the spindle; from this central mass proceed three  
“or more equidistant arms extending to the outside of the  
“stone eye or other sufficient length. A flange rises on each  
“side of these arms forming a groove to receive the arms of the  
“centre iron. Screws pass through these flanges, their points  
“pressing against the arms of the centre iron, and propelling  
“the stone. In the under side of the centre iron which  
“carries the runner a hollow is sunk to receive the top of  
“the spindle, on which it rests. The arms of the centre  
“iron extend beyond the eye into the body of the stone, in  
“which they are firmly fixed. A screw passes perpendicularly  
“through each arm, and its extremity rests on the corre-  
“sponding arm of the mace; by means of these screws (or  
“by wedges) the parallelism of the runner and bed stone can  
“be adjusted and preserved.”

[Printed, 8d. Drawing.]

A.D. 1862, August 7.—No. 2217.

COOMBE, BENJAMIN.—(*Provisional protection only.*)—This invention of apparatus for cleaning and decorticating wheat and other grain, subjects the grain to a severe scrubbing action between one or several pairs of horizontal discs with roughened surfaces, one disc of each pair rotating on an axis, whilst the other is stationary. When several pairs of discs are employed, those of each pair which revolve, are fixed at a suitable distance apart upon a vertical shaft, which also passes through the companion or stationary discs; so that they come in pairs one above another, there being interposed between each pair a conical funnel of wire cloth; these funnels receive

the grain as it is thrown centrifugally or falls off the edge of the stationary discs in succession, and they deliver it into the central opening of the next revolving disc beneath. The dust and matter cleaned off the grain, in part sifts through the funnels, and the remainder is winnowed out by a fan. Instead of employing discs with flat surfaces, they may be made conical, the roughened surfaces fitting one into the other, for which purpose one, the outer conical disc is roughened internally to receive the other which is roughened externally, and may be solid or otherwise.

[Printed, 4d. No Drawings.]

● A.D. 1862, August 8.—No. 2219.

HALL, EDWARD.—This invention is described as consisting in a process of steaming foreign grain, whereby (it is stated) "its flinty nature is removed, and the said grain rendered equal to English produce. The means or apparatus consists of a cylinder placed at an incline in suitable framing, with spouts and stoppers for the introduction and delivery of grain and with pipes and valves or taps for inlet and outlet of steam. Also a rotating winch or a spindle having a series of arms and wings thereon capable of rotating, is placed within for producing motion or stirring the grain. Or the cylinder may be made to rotate, so as to give motion to the grain, by having suitable arrangements provided for the inlet and outlet of the steam and grain."

[Printed, 8d. Drawing.]

[A.D. 1862, October 14.—No. 2771.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Cyprien Marie Tessié du Motay, and Charles Raphael Maréchal.*—(*Provisional protection only.*)—This invention relates to a system of dressing millstones, by the action on the silicious matter of the stone, of hydrofluoric acid, those intermediate parts of the surface of the stone which do not require removal being protected by a covering of varnish or ink. The acid is poured into those parts requiring to be grooved or furrowed, and it has the effect of dissolving or disintegrating the surface of the stone, and continues to bite or eat deeper into the surface, in proportion to the time it is allowed to remain.



The nature of several resisting compositions, and the ingredients in proportional quantities of which the varnishes or the different inks suited to protect those parts of the surface of the stone which lie between the grooves and furrows, are enumerated and explained.

The mode of applying the resisting ink is by means of prepared transfer paper, upon which the design of the furrows and grooves is delineated, either by printing, lithography, or otherwise. The varnish can be applied either by a brush, pen, or by other means; the surface of the stone is to receive an even coating all over, and from those parts requiring to be bitten out by the acid, the varnish is removed by a pointed instrument or otherwise, after the manner of etching.

[Printed, 4d. No Drawings.]

A.D. 1862, October 23.—No. 2854.

TURNBULL, JOHN.—This invention relates to the construction of vertical mills designed for grinding grain.

The bed or stationary stone is placed edgewise in a frame and capable of being moved, so that its grinding surface may be adjusted either nearer to or further from the grinding surface of the running stone, which is mounted on a horizontal shaft that passes through a large central tubular boss on the bed stone, and finds a bearing on a standard frame beyond. The grain is fed to the grinding surfaces through the tubular boss in the bed stone, by means of a spiral or helical vane attached to the shaft, from a feeding receptacle, through which the shaft passes in front, the grain descending is caused to fall therein in regulated quantity from a hopper by the aid of a spout, from which the grain is shaken every revolution of the shaft by means of an adjustable tappet, laterally projecting therefrom. The stones are inclosed by a casing which is provided with the usual air vents, and the shaft is together with the running stone, with a view to adjust the precise distance apart of the grinding surfaces, acted upon by a screw at its extreme end, provision being made in the bearings for resisting the thrust.

[Printed, 8d. Drawing.]

A.D. 1862, November 7.—No. 3014.

JOHNSON, JOHN HENRY. — (*A communication from Jules Lemoine and Louis Joseph Maximilien Chollet.*)—(*Provisional*



*protection only.*)—This invention relates to a process of decortivating grain and seeds, which is effected chemically by the use of dilute sulphuric and other acids or alkalies, or acid or compounds, assisted or not by heat, and used in a semi-fluid or viscous state for the purpose of removing or destroying the skin or pellicle which envelopes the kernel of the grain without injury thereto. It is stated that “the best result will be obtained from the use of sulphuric acid of about 66 degrees of strength, Beaumé. Sulphuric acid diluted with water may be also used, but it will require a longer time to produce desired results. Nitric and chlorhydric acids may also be employed, assisted by heat if desired, and in some cases caustic soda or potash may be used. In carrying out the process of chemical decortication by the use of sulphuric acid, for example, the grain or seeds to be treated are introduced into a wooden vessel or one lined with lead, and sulphuric acid of 66 degrees of strength, Beaumé, is added thereto in the proportion of about 15 parts by weight of sulphuric acid to each 100 parts by weight of the grain or seeds, which should be in a dry state before introduction into the vessel. The whole is then well stirred or agitated for the space of from 15 to 20 minutes, so as to cause the whole of the grain or seeds to be brought in contact with the acid, so soon as the grain assumes a slightly purple tint 50 parts by weight of water are to be added, which after being well stirred with the mass for a few minutes is to be run off and preserved for further use until it attains a strength of 40 degrees of acid, Beaumé. After a further thorough washing in water, and the traces of acid have been removed by the aid of any suitable alkaline solution, the grain is spread upon cloths, and submitted to the action of natural or artificial currents of air, which completes the drying of the grain.”

[Printed, 4d. No Drawings.]

A.D. 1862, November 8.—No. 3022.

KENT, GEORGE, and GRIFFITHS, EDWARD PATGE.—This invention relates to the construction of apparatus adapted to the process of reducing cocoa berries and other vegetable and animal substances to powder or pulp, and to mashing potatoes. At the lower part of a cylindrical vessel a bottom or partition is fitted, comprising a circumsposed series of

cutting blades radiating from the center like the spokes of a wheel, the cutting edge of each blade slightly overlapping but not touching the back edge of the next, so that a thin opening is formed through which the shavings or fine particles fall, there being a vertical spindle, and fixed thereon an instrument with inclining projections, which revolve close over the cutting edges of the blades but do not come in contact. These projections carry the berries over and press them upon the cutters, and by this means they are gradually reduced. The apparatus is worked by a handle fixed to the top of the axis and moving round horizontally.

When the apparatus is used for mashing potatoes, reducing bread or other vegetable substances, or animal matter previously pounded or beaten in a mortar or otherwise, the cutting blades are removed, and a bottom or partition of wire gauze is substituted.

[Printed, 1s. 4d. Drawings.]

A.D. 1862, November 10.—No. 3032.

NEWTON, WILLIAM EDWARD.—(*A communication from Victor Pierre Célestin Baud.*)—The object of this invention relating to the treatment of maize or Indian-corn, is to remove the oleaginous and the germ from the farinaceous parts of the grain previous to the grinding process, and by this means produce therefrom much purer flour, suitable (it is stated) for keeping, and especially adapted to the making of bread.

The maize is first steeped for several hours in cold water containing one hundredth part of its bulk of carbonate of soda. It is next steeped in a second bath of cold water containing one thousandth part of its weight of hydrochloric or other acid capable of forming a saline compound with the carbonate, with which the grain had previously been impregnated. When removed from the second bath the grain is carefully dried, and is then crushed by the action of either beaters, rollers, or vertical stones. After the crushing process, the grain is submitted to the action of a specially constructed bolting apparatus, furnished with sieves respectively graduat- ing in fineness. The farinaceous parts when separated from the husks and membranes or coating, are by grinding converted into flour more or less fine, or into semolina, both products being free from the peculiar and disagreeable flavour

which is derived from the oil contained in the husks, if the separation of the latter therefrom is not perfect."

The husks after steeping and fermentation yield a fatty and milky liquid, possessing the properties of an energetic leaven, which when mixed with flour in the kneading trough, adds to the dough a certain proportion of alimentary matters, bleaches certain kinds of naturally brownish flour, and accelerates the leavening or raising process. The offal may serve for the manufacture of oil, or be used as food for fattening cattle.

[Printed, 4d. No Drawings.]

A.D. 1862, November 19.—No. 3113.

BUCHHOLZ, GUSTAV ADOLPH.—This invention relates to the manufacture of semolina and flour, and to the apparatus employed in the process, the chief object being to obtain from a given quantity of corn a larger per centage of semolina than it will yield when worked by the ordinary method. To this end (the inventor says) "I first hull the wheat intended to be converted into semolina in a novel construction of apparatus, the acting surfaces of which are formed of a peculiar arrangement of metal blades, which when the apparatus is set in motion give to the grain the friction requisite for removing the outer skin or the greater portion thereof. When the grain has passed through this hulling machine, I separate the bran or hull therefrom by means of brushes, and afterwards submit the grain to the action of a novel construction of crushing roller mill, whereby a large portion will be reduced to semolina fit for the market. This I separate by means of sieves from those portions which still retain bran upon their surfaces, and the yet unbranned portions I submit to the action of millstones so set that they will impart only so much friction to the particles of crushed corn as will serve to destroy the adhesion of the bran thereto. This being effected, I next by means of a dressing machine separate the small portion of flour and semolina formed during the crushing and grinding processes, and by subjecting the semolina to blasts of air I discharge the remaining bran therefrom."

The hulling machine consists of a number of cylindrical chambers, placed in communication one above another on a



vertical shaft, which revolves and carries round a number of wheels furnished circumferentially and underneath with sheet iron or steel blades, which act in succession upon the grain, there being one wheel in each chamber, and a valve to open the communication with the chamber beneath. The lowest chamber is furnished with gratings for the escape of the bran, and the sharpness of the blades is maintained by reversing when necessary the direction of rotation, special appliances being provided for that purpose.

The rollers of the crushing mill are furnished with pointed cutting teeth of peculiar shape, and one roller is made to revolve faster than the other.

[Printed, 1s. 4d. Drawings.]

A.D. 1862, December 23.—No. 3425.

PATTERSON, JOHN.—(*Provisional protection only.*)—This is an invention of apparatus applicable to the grinding, crushing, cutting, cleaning, and hulling or shelling of grain, and other vegetable produce, also to the crushing or grinding of mineral and other substances.

The grinding surfaces may be of steel or of ordinary millstone horizontally disposed, but instead of imparting to the running stone, only the usual simple rotary movement on its axis, it has in addition an orbital motion, its axis being caused to revolve round a common center. By this means a “wrenching” or compound grinding action of the runner upon the substances under operation is obtained in addition to the ordinary rotation of the stone. “Or (says the inventor) in lieu of imparting such compound motion to one of the grinding surfaces, I may cause one of such surfaces to revolve in the ordinary manner, whilst the other grinding surface is caused to move in an orbit with or without a rotatory motion round its own axis or centre.”

[Printed, 4d. No Drawings.]

## 1863.

A.D. 1863, January 19.—No. 157.

SABEL, EPHRAIM.—(*A communication from Joseph Sépulchre.*)—The object of this invention is the production of artificial stone suitable for millstones, grindstones, and other purposes,



from the slag and residuum of blast furnaces, consisting of silica and lime in combination, and alumina, oxide of iron, and other substances in minor proportion. The liquid slag is allowed to run into pits made with sides inclining inwards at an angle of  $30^{\circ}$ , whereby the adhesion of the partly solidified crust to the sides of the pit is prevented; the crust generally rises to the surface, but if it fails to do so, it is brought up by the use of iron bars or other suitable appliance. The dimensions of the pits will be regulated by the size and form of block required, and when special forms have to be produced, the molten slag is run into sand moulds formed in frames placed in the pits or otherwise, the frames being heated previous to the admission of the slag. After the casting process, the moulds remain undisturbed for several days. The blocks thus obtained are subsequently worked in the ordinary way of dressing natural stone, and the result is a hard, homogeneous, close-grained non-absorbent mass, applicable to the uses above-named, and capable of being sculptured, hewn, or cut for such and a variety of other purposes.

[Printed, 4d. No Drawings.]

A.D. 1863, January 21.—No. 186.

CLARK, WILLIAM. — (*A communication from Jean Baptiste Pierre Camille Bergouhnioux.*)—(*Provisional protection only.*)—The object of this invention is to effect by chemical affinity the desiccation and preservation of corn and a variety of other vegetable and animal substances from decay. The inventor says:—"Supposing I have to dry some damp substances, such as wood . . . wool, cloth, linen, paper, ribbands, corn, medical plants, etc. I enclose the substances to be dried in a space as limited and closed as possible free from any gas or air; in this space I introduce a sufficient quantity of a chemical agent for which water steam has great affinity, caustic potash for instance. If steam has great affinity for the chosen body, or if the contact surfaces are well spread and renewed I obtain the desired desiccation. Supposing that I desire to preserve certain substances such as corn, flour, fruits, preserved sweetmeats, or other nutritive substances, matches, tobacco, and other hygrometric matters liable to be injured by an excess of dampness, I enclose such substances in a space limited and closed, in which

“ space either free from or full of air, or of any gas at a  
 “ suitable tension or temperature according to the article to  
 “ be operated on, I dispose a chemical agent more hygrometric than the substance to be preserved, and if the  
 “ absorbing body is too hygrometric desiccation will be  
 “ effected, but there will also result the necessary preservation if the chosen body is but sufficiently hygrometric.  
 “ Now this expression “ free from any gas ” must be well understood, for if it be not sufficient in order to preserve certain peculiar substances to enclose them in a gaseous atmosphere sufficiently unhydrated, it is further necessary that the gaseous bark be sometimes air, sometimes azote, and sometimes hydrogen, or others, and it must be considered as free from gas.”

[Printed, 4d. No Drawings.]

A.D. 1863, January 29.—No. 262.

BONNEVILLE, HENRI ADRIEN.—(*A communication from Louis Jean Gustave de Coninck.*)—This invention relates to the construction of granaries or storehouses “ for stirring, airing, cooling, drying, and preserving grain, etc. by producing a variable, gradual, and progressive current from the summit of the base of the granary.” It consists in building the different floors in a square or rectangular form, with joists on which the flooring planks are so placed inclining on their edges and slightly apart, as to form a series of hollows and alternate crests or ridges with intervening narrow openings, through which the grain falls from floor to floor, and is raised from the lowest to the upper floor by means of an endless chain of buckets. As the grain falls from one floor to another, an air current is produced which serves the purposes of ventilation. The collective area of the openings in the several floors increases progressively from the top to the bottom, so that the grain falls from floor to floor without accumulating until it reaches the lowest, under which there is a sieve of perforated metal or metallic cloth.

The grains by means of the friction without pressure against each other, are cleaned from all foreign matters, dust and impurities, and the frequent movement of the grain is stated to be a great protection against insects.

Sieves to receive the grain from the lifting buckets may be placed on the upper floor, and a variety of other auxiliaries to perfect the system are proposed or suggested.

[Printed, 8d. Drawing.]

A.D. 1863, February 23.—No. 488.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Cyprien Marie Tessie du Motay, and Charles Raphael Maréchal.*)—This invention relates to a system of dressing or furrowing millstones, by means of the action of hydro-fluoric acid on the silicious matter of which the stones are more or less composed. Those intervening parts of the surface of the stone which are intended to remain smooth and untouched, are covered with either ink or varnish, specially compounded to resist the action of the acid. The ink may be printed on paper and transferred to the stone, or laid on by an inking roller when a stone requires redressing, and when all the parts intended to be plain are protected with a covering of varnish or ink, the acid is poured into the unprotected parts, and is allowed to remain until the surface is eaten or bitten away and reduced to the depth required.

The varnish may be composed of wax, pitch, bitumen, essence of turpentine, spermaceti, mastic, or any other resinous substances mixed together, in proportions varying according to the degree of fluidity required. Instead of the above, the soft varnish used in the process of etching may be employed.

The proportions and ingredients for three different compounds or inks are given, the first consisting of bitumen, stearic acid, essence of turpentine or benzine, resin, plaster, (sulphate of lime) and coal, mixed together in certain proportions.

[Printed, 4d. No Drawing.]

A.D. 1863, March 18.—No. 727.

WREN, BENJAMIN.—This invention for cleaning and treating certain descriptions of wheat and other grain, is supplementary to a prior invention for which Letters Patent dated September 20, 1849, No. 12,774 were granted to this inventor for his system of treating and removing from Egyptian wheat and



other grain, earthy and soluble particles, and also purifying unsweet and dirty grain, by washing and rinsing the grain in hot water and afterwards drying it by means of a centrifugal drying machine.

According to the present invention, after the grain has been passed through a separator or winnower in the ordinary way, it is transferred through a spout into a horizontal cylinder covered with wirework or perforated plate. This cylinder is partly submerged in hot water, and as it revolves the grain is made to pass through it by a spiral vane which is fixed inside. After this washing process the grain is dried in a centrifugal desiccating machine, consisting of a double series of conical drying vessels, into which the wheat falls in succession, there being currents of air in one modification introduced mechanically. After passing through the first series of driers, the wheat will be sufficiently dry for the grinding or decorticating process, but if intended for storing, it is passed through the second series of driers.

The decorticating machine consists of a stone of coarse grit revolving rapidly on its axis within a slowly revolving cylindrical case, which has a rough internal surface formed like a grater by close perforations made from the outer surface; between the rough surface of the case and the stone there is formed a thin annular space, through which the grain is passed until decortication is complete. Thence the grain is conveyed to a kind of sieve called a "Dickey," which separates all the fine particles, and the skin or bran is afterwards removed by a current of air."

[Printed, 8d. Drawing.]

A.D. 1863, March 30.—No. 822.

AGER, WILSON.—(*Provisional protection not allowed.*)—This invention relates to the constructional arrangement of machines designed for cleaning and decorticating rice and other grain. The inventor proposes to employ for the above process, "a  
" modification of the well-known barley mill, but to adopt an  
" arrangement whereby a current or currents of air may be  
" directed through the rice or other grain during the operation  
" of cleaning the grain and removing the inner cuticle. For  
" the better action of the currents of air upon the rice or other



“ grain a number of ledges or projections are fitted longitudinally to the interior of the revolving screen or outer casing, which ledges serve to carry up the grain and allow it to descend again to the bottom of the casing, the current or currents of air being directed through the falling grain, and carrying off the dust or flour produced by the action of the decorticating stones, thus leaving the rice or other grain perfectly clean and free from the inner pelicle. Various means may be employed for introducing the air, which will readily suggest themselves to a mechanic, but the arrangement which I have found to answer sufficiently well is to make the shaft which carries the stones of a tubular or hollow form, and to perforate it with air holes, some of which perforations may be made in the stones themselves. The currents of air serve not only to carry off the dust, but also to keep down the temperature of the stones, and thereby prevent the “glazing” or “gumming” of the surface of the stones, which has hitherto been found to be a great objection in the ordinary barley mills.”

[Printed, 4d. No Drawings.]

A.D. 1863, April 4.—No. 860.

GEDGE, WILLIAM EDWARD.—(*A communication from Jacques Chiron, André Chiron, and Pierre Faure.*)—(*Provisional protection only.*)—This invention relating to the construction of apparatus for bolting flour, comprises (as described) “the ordinary bolter covered with its cloth with the addition of a wire gauze cylinder within it. On leaving the mill the undressed flour is received in the cylinder or inner bolter, which permits the flour to pass through its web, but retains both the fine and the coarse bran, when they arrive, stripped of flour at the opposite extremity of the cylinder. The flour which arrives alone in the second bolter is there bolted more regularly, and deposits a larger quantity in the compartment reserved for the firsts.”

The advantages enumerated are stated to be, a more complete separation of the bran and flour; increase in the quantity and quality of the “firsts”; considerable decrease of “seconds,” and economy of time and space.

[Printed, 4d. No Drawings.]

A.D. 1863, April 16.—No. 962.

DE MASSAS, FRANÇOIS ANTOINE EDMOND GUIRONNET.—(*Provisional protection only.*)—This invention relates to the construction of machines for cleaning and peeling grain or seed, and to smut machines.

A drum with roughened surface is fitted to revolve on a central axis concentrically within a cylindrical casing, placed inclining from the horizontal, and furnished internally with three sets of brushes, respectively graduating in strength, the first being of wire combined with bristles, the next French whisks or other fibre, and the third or softest set of cocoa-nut or other fibre more pliant than the second set. Between the second and third sets is a surface of wire gauze. This arrangement of brushes and wire gauze occupies the lowest end of the cylinder or casing, the upper portion being furnished with brushes of the first description combined with a wire gauze surface, and for smut machines the whole of the inner surface of the casing may be furnished in the same manner as described with respect to the upper portion. The wire of which the gauze is made is transversely of angular section, the warp lying in the direction of the length of the casing. The upper section of the feeding apparatus keeps back stones, ligneous, and other foreign substances, the lower section being fitted with inclining gratings, riddles, or perforated plates, which allow the dust to escape, whilst the grain is retained and falls upon a helical bladed feeder, a pipe being provided to supply water for damping the grain, whilst the helical feeder moves it forward to the machine.

[Printed, 4d. No Drawings.]

A.D. 1863, April 18.—No. 976.

BUCHHOLZ, GUSTAV ADOLPH.—This invention relating to the construction of apparatus for hulling grain, and reducing granular substances, is supplementary to a former invention, for which Letters Patent, dated November 19, 1862, No. 3113, were granted to this inventor.

1st. The hulling machine is described as being made “of a  
“ hollow conical case, which is provided at certain parts  
“ throughout its length with converging blades of iron or  
“ steel. These blades are set on edge, and are spaced out by

“ thin filling pieces of paper, cardboard or thin wood, and  
 “ are arranged longitudinally in the case so as to present  
 “ their cutting edges to the grain to be hulled. By experi-  
 “ ment I have found that the best result is obtainable by  
 “ fitting a portion only of the inner surface of this conical  
 “ case with these converging blades, the other portions of  
 “ the case being made up of wire gauze or perforated metal,  
 “ which will act as a sieve for the bran or skin that is removed  
 “ from the grain by the action of the steel blades thereon to  
 “ fall through. Within this case is fitted a conical runner  
 “ provided at its periphery with longitudinal steel blades set  
 “ radially around the runner. This conical runner is made of  
 “ considerably less length than the case in which it is placed,  
 “ to allow of its being moved up longitudinally therein into  
 “ the more contracted portion of the case as the blades are  
 “ worn away, and the diameter of the runner consequently  
 “ decreases.”

2nd. In order to prepare or break down grain for the operation which reduces it to the form of semolina, instead of using the crushing rollers formerly described, one of the rollers employed is grooved round or transversely, and the other lengthwise or longitudinally.

The machine which reduces the grain to semolina may (it is stated) “ be described as a vertical conical mill, the cutting  
 “ surfaces of which are furnished like the hulling machine  
 “ already described, with iron or steel blades spaced out  
 “ by strips of cardboard, paper or thin wood placed between  
 “ them.”

[Printed, 1s. 8d. Drawings.]

A.D. 1863, April 25.—No. 1042.

NEWTON, WILLIAM EDWARD.—(*A communication from Aristide Barbier and Nicolas Edouard Daubrée.*)—This invention relates to the construction of thrashing machines, which are also capable of performing the process of hulling or decorticating grain and seed employed for forage, and oleaginous seeds, rice, coffee, &c. It may also be employed in cleaning grain, which will acquire a gloss and be less liable to attack by the weevil.

Instead of submitting the grain to an ordinary beating or thrashing cylinder, which (it is stated) breaks the grain and

often pulls the ears off the straw without thrashing them, the grain in the straw is passed sideways between two or more cylinders revolving at different speeds, which operate with a rubbing effect upon the ears, so that the grains or seeds are separated from the straw without violence, and none are broken; the speed of the cylinders being comparatively slow, and the straw fed in sideways or transversely, it is but little damaged by the process, but the length of the cylinders must be at least equal to the length of the straw. If smaller machines with short cylinders are required, the straw must be fed in endwise, and in addition to the rotatory motion of the cylinders, one or more should be caused to reciprocate endwise.

The machine may also be employed for hulling grain, seed, and berries, and for cleaning grain from dust and other particles adhering thereto. The grain (it is stated) will acquire a polish, that with other advantages will increase its value.

[Printed, 10d. Drawings.]

A.D. 1863, May 5.—No. 1122.

BRADSHAW, PETER.—This invention relates to a particular mode of mounting millstones for grinding grain and other substances. According (it is stated) to the common practice it is usual to balance the running stone on a pivot at the top of the mill spindle, which drives it by means of two forks, carried by a boss at the upper end of the spindle; but in adjusting great care is required, otherwise the running stone will bear unequally on the bed stone, "which is fatal to good grinding."

Now the invention consists in making "the centre bar of the runner to carry the pivot, and I cause it to bear on a flat surface on the upper end of the driving spindle; thus it will be seen that the pivot is not confined as formerly, but can adjust itself accurately to the driving instruments, so that these may be sure to bear equally on each side of the pivot. The pivot might be mounted at the top of the spindle, and the plain surface might be on the centre bar, but this would produce some difficulty in balancing the stone. I prefer to employ in place of the driving forks before mentioned lugs or projections on the

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“ boss at the top of the driving spindle, and these lugs or  
 “ projections enter loosely into corresponding recesses in the  
 “ centre bar; the sides of the lugs or projections I do not  
 “ make vertical, but to project forward on a level with the  
 “ plain surface on which the pivot rests, so that the contact  
 “ for driving the stone or the ‘bite,’ as it is termed, may  
 “ take place only on a level with the pivot; by taking the  
 “ bite only on a level with the pivot the motion is rendered  
 “ steadier than it would be if the bite were either above or  
 “ below the centre.”

[Printed, 10d. Drawing.]

A.D. 1863, May 15.—No. 1226.

PATTERSON, JOHN.—This invention relates to the construction of mills designed for “ grinding, crushing, cleaning, and  
 “ hulling or shelling various kinds of farm or vegetable produce, also applicable to the crushing or grinding of minerals  
 “ and other substances.” It refers to those horizontal mills which operate by means of two stones, one placed above the other, and consists in:—

1st. Causing both stones to revolve in the same direction but at different speeds, to effect a more equable distribution of the feed over the grinding surfaces, and facilitate the discharge therefrom of the ground material.

2nd. Proposes in certain cases to impart an orbital motion to one of the stones, whilst at the same time it is caused to rotate on its axis, or it may have an orbital motion without rotating on its axis.

3rd. A mode of feeding, for which purpose “ a recess or  
 “ space is formed in the back of the stone around the spindle upon which it revolves, and as close up to the surface of  
 “ the stone as convenient, and from this recess the grain or other substance to be ground or otherwise acted upon is  
 “ thrown through several surrounding openings by centrifugal force. The admission of the grain or feed is regulated by a  
 “ modification of the apparatus commonly known as the  
 “ ‘ silent feeder.’ The sliding tube in this case encloses the  
 “ mill spindle, and is sufficiently large to allow the grain to  
 “ pass freely towards the end of the tube, from which it is  
 “ allowed to escape as the tube is drawn back from the inner  
 “ end of the recess.”

4th. Causing both stones to revolve on the same vertical center, one being fixed on a hollow shaft or sleeve, through which the mill shaft passes and carries the other stone.

5th. Regulating the distance between the grinding surfaces by means of a wheel screwed on to a collar on the main spindle.

[Printed, 1s. 4d. Drawings.]

A.D. 1863, May 18.—No. 1244.

HEBBLEWHITE, BENJAMIN.—(*A communication from Samuel Hebblewhite.*)—(*Provisional protection only.*)—This invention relates to the construction of crushing mills adapted to the process of producing oil cake, seeds, and other substances.

These mills (as described) comprise “a frame carrying  
“toothed rollers, between which the substance to be reduced  
“is first passed, in order that it may enter another part of  
“the machinery, which I term a pulverizer, in pieces of such  
“size that the pulverizer will not be liable to become choked.  
“A hopper conducts the substance, after being acted upon by  
“the reducing rollers into the pulverizer, which consists of a  
“closed cylinder the inner surface of which is toothed; an  
“axis carrying toothed arms is fitted inside the cylinder, and  
“the outlet from the cylinder is covered or lined with wire,  
“gauze, or with perforated plate. The toothed arms are made  
“to revolve rapidly, and the substance fed in from the  
“reducing rollers is projected against the interior surface  
“of the cylinder, and becoming pulverized is driven out,  
“when sufficiently fine, through the wire gauze or perforated  
“plate.”

[Printed, 4d. No Drawings.]

A.D. 1863, June 4.—No. 1393.

BLAKE, STEPHEN, and LEE, THOMAS, and DUTTON, ROBERT.—This invention, relating to the constructional details of horizontal flour and meal mills, consists in:—

1st. Forming inside the case around the periphery of the stones an annular space into which the ground grain falls, as it is centrifugally thrown out from between the grinding surfaces. The case extends to and forms a chamber beneath the stones, and there the ground grain or meal finds its way, without stopping to form a “mill ring.”

2nd. The employment of a fan, which may be driven by the mill shaft, to keep the stones and ground grain cool, and drive the latter in the direction of the exit passage or spout, which leads to the proper receptacle, at the same time the fan, which is disposed inside the casing under the bed stone, draws an inward current of air through the exit passage, and forces it on through the annular space round the mill to two air shafts, where it is discharged.

In some cases (it is stated) the current of air drawn in through the exit passage may be found insufficient to cool the mill and the meal, and when this occurs a separate air supply can be connected.

[Printed, 10d. Drawing.]

A.D. 1863, June 12.—No. 1468.

WILSON, JOHN CHARLES.—(*Provisional protection only.*)—This invention relates to the construction of machinery devised for reducing cocoa-nut kernels and also other substances to a pulpy state, and which (it is stated) has hitherto been effected either by cumbrous edge stones or by grooved and plain rollers, which are difficult to keep clean and the grooves free. The present invention remedies the above objection to the grooved and plain rollers, by making holes through the former from the bottom of the grooves to the interior of the rollers, so that the material, when the rollers are in operation, is squeezed through to the inside of the grooved rollers, and thence falls out at the end upon the plain rollers, and passing between them is finally crushed.

The "invention also consists in perforating one or both of  
 " the plain rollers with holes, and covering it or them with a  
 " strand or cord of twisted hair, so as to partially express the  
 " oil or other fluid part of the substance under treatment  
 " through these perforations into the interior of the roller,  
 " keeping out the more solid part, which falls down by itself  
 " below."

[Printed, 4d. No Drawings.]

A.D. 1863, June 12.—No. 1469.

WILSON, JOHN CHARLES.—(*Provisional protection only.*)—This is an invention of a "machine for unhusking rice and other  
 " seeds," an operation which (it is stated) has hitherto been

performed either by stampers, which are cumbersome and tedious or by millstones, which are difficult to keep in order, are liable to break the seed, and are unsuited for hand power.

According to "this invention the operation is performed  
" by means of partly revolving discs, cones, or cylinders of  
" perforated tin plates, the ragged edges of the perforations  
" forming the rasping surface, which effects the desired purpose. The cheapness of this material renders it well suited  
" for producing an economical machine for general use, while  
" its hardness is such as to render it more than usually  
" durable."

[Printed, 4d. No Drawings.]

A.D. 1863, June 16.—No. 1508.

STEELE, JOSEPH, and MASON, WILLIAM.—This invention relates to several modifications of a machine devised for removing bran from wheat, consisting in:—

1st. The use of a wrought or cast iron inclining cylinder, which is furnished internally with grooves running from end to end spirally. In the ends are openings for the admission and emission of the grain, and fixed upon a central shaft is a frame carrying beaters of wood or iron, which rotate with the shaft. The grain, previously moistened by steam or water, is fed into the highest end of the cylinder, and is operated upon by the beaters and the grooves in a way to cause or partially cause the removal of the bran or outer skin, the process being repeated as often as may be requisite, the grain gradually finding its way to the lowest or exit end of the cylinder assisted by the inclining direction of the spiral grooves.

2nd. The cylinder of this apparatus is conical, and spirally grooved inside, and the beaters have ends bent or curved, at one end of the frame to advance, and at the other end to retard the progress of the grain.

3rd. In this machine the grooves run longitudinally from end to end, and for the purpose of moving the grain through the cylinder, it is furnished inside with a spiral projection or rib. The beaters are of the ordinary kind, and made to suit machines with either cylindrical or conical cylinders.



4th. In this modification the beaters have a spiral inclination, and the grooves in the cylinder may be made either in straight or inclined lines.

5th. A hollow cylinder formed with segments of stone set apart, and the intermediate spaces covered or closed with wire gauze or perforated metal. The beater frame used with this cylinder is covered with sheepskin tanned with the wool on.

Vertical machines are furnished with several internal annular flanges to prevent the too rapid descent of the grain, the flanges having holes through which the grain falls from one flange to another.

After the decorticating process the grain is winnowed and dried over an oven in an apparatus comprising a connected series of troughs, wherein are hollow rotating hot air cylinders with helical blades, which stir and move the grain from trough to trough whilst it is dried by the hot air which passes through the cylinders. Finally, to complete the process the grain is again brought under the operation of a fan.

[Printed, 1s. 6d. Drawings.]

A.D. 1863, June 19.—No. 1542.

HENRY, MICHAEL.—(*A communication from Jules Lemoine and Louis Joseph Maximilien Chollet.*)—(*Provisional protection only.*)

—This invention relates to the process of hulling and cleaning or decorticating grain and seed, which is “effected by  
 “means of concentrated acids and concentrated caustic  
 “alkalies, but the agent especially recommended for the  
 “purpose is sulphuric acid of a strength of from twenty to  
 “forty degrees Baumé preferring about thirty-five degrees  
 “Baumé. By these means the episperm, with or without  
 “the husk or boll, is separated without being carbonized,  
 “and without injury to the epicarp and endocarp, and  
 “after being well washed it, with or without the husk or  
 “boll may be received and collected in a fibrous condition on  
 “cloths or other receivers, and used in the manufacture of  
 “paper. For wheat, barley, rice, and other cereals, fifteen to  
 “twenty per cent. acid at thirty-five degrees, employed under  
 “gentle heat is recommended. The acid solutions or spent  
 “liquors after having been used may be washed and restored  
 “to their previous strength, say, about thirty-five degrees,  
 “by adding acid of a strength of about sixty-six degrees

“ Baumé. The liquors used in the decorticating process may  
 “ be applied in the manufacture of the sulphates of iron and  
 “ zinc, especially with the residua from the castings of iron  
 “ and zinc. The said liquors may also be applied in the  
 “ manufacture of artificial mineral waters with carbonate of  
 “ lime or delomite; grains and seeds, decorticated before ger-  
 “ mination, may be applied for the manufacture of beer,  
 “ glucose, and alcohol.”

[Printed, 4d. No Drawings.]

A.D. 1863, June 20.—No. 1543.

SMITH, THOMAS, MOORE, THOMAS, and BURRELL, MAJOR.  
 —This invention relates to the construction of machines  
 adapted to the process of dressing flour. It refers to those  
 machines which are covered with silk bolting cloth, and has  
 for its object the expediting and regulating the quantity of  
 flour to be dressed, and to improve its quality.

For this purpose the horizontal inclination of the bolting  
 reel or cylinder is made capable of adjustment to suit meal  
 made from either dry or damp grain. When the meal is damp  
 or the weather humid, the action of ordinary beaters in these  
 machines is requisite, but when everything is dry they are not  
 required, and according to one part of the invention a contri-  
 vance for putting them in motion or suspending their action  
 when the machine is in operation is provided, whereby the  
 necessity for removing the bolting cloth is avoided.

The invention also “ consists in fixing on the inside of the  
 “ bars of these reels a metallic wire fringe or comb, the object  
 “ being, that as the reel revolves, and the meal falls thereby  
 “ from the upper to the lower part, it passes through this  
 “ metallic wire fringe or comb, and in so passing the flour is  
 “ scraped or rubbed off the bran or pollard, which is thereby  
 “ deprived of the flour adhering to it, and thus cleaning the  
 “ bran and pollard more perfectly from the flour which it  
 “ would otherwise carry away with it.”

[Printed, 10d. Drawing.]

A.D. 1863, July 3.—No. 1655.

DAVISON, ROBERT.—(*A communication from Louis Basile  
 Sulpice Poissant.*)—This is an invention of a machine designed  
 for decorticating and cleaning corn and other grain, and

whereby the grain is first subjected to a beating action, then winnowed by a blast, and afterwards again beaten and winnowed.

The machinery (as described by the inventor) “ consists of a case, in the upper part of which a chamber is formed, closed at bottom by a trap or slide; in this chamber a shaft carrying arms with vanes or beaters is mounted. Below this chamber is an inclined shoot, from which the grain falls under the action of a blast or current of air, which drives out the loose matter or pellicle loosened by the beaters in the first chamber, while the grain itself falls into a third chamber similar to the first, where a similar shaft with beater vanes is fitted; it then passes through a fourth chamber, in which it is subject to another blast, and from whence all but the grain is driven off through an aperture provided for the purpose, while the grain descends into a tray or other vessel placed for its reception. The grain will now be found sufficiently decorticated and cleansed for ordinary purposes, and it may be stored, but it may be advantageously dried, and before being ground it may be passed a second time through the machine before described. The beater shafts and the axis of the fans where the blast is produced by a fan are all connected by wheel gear or otherwise, and the whole of the motions may be taken from a main shaft, to which rotary motion is communicated by a belt from the prime mover.”

[Printed, 10*d*. Drawing.]

A.D. 1863, July 30.—No. 1883.

INSKEEP, GEORGE.—This invention relates to the construction of a machine capable of grinding grain and other substances, but chiefly adapted (it is stated) to grind bones at one operation to a greater degree of fineness than before accomplished. The operating parts of the machine comprise a strong drum or cylinder having its axis resting in bearings fitted to a substantial frame. The surface of the drum is furnished with fixed steel cutters having serrated edges projecting from dovetail grooves, made in the surface of the drum to receive the cutters, which are curved in such manner that the tendency of the bones or substance under operation *will be to move towards the midlength of the cylinder, and*



not towards the ends. The substance to be ground is placed in a hopper which incloses the cylinder excepting at top, the front of the hopper, called a ram, being made capable of sliding towards the front of the cylinder, and forcibly holding and pressing by means of weighted levers the bones or substance against it whilst it revolves. Below the hopper is a thick bed plate or block, its concave end, which is furnished with cutters, being presented to the cylinder, and whilst passing between them the ground substance as it falls from the hopper is reground. The cutters in the bed block are removable, so as to be capable of being changed for others more suited to the substance under operation.

[Printed, 8d. Drawing.]

A.D. 1863, September 3.—No. 2181.

NEWTON, ALFRED VINCENT.—(*A communication from Adolphe Rousseau.*)—The object of this invention is to adapt machinery capable of cleaning grain or seed to the decortication of such grain or seed. Three modifications of the apparatus are described, one being a horizontal arrangement and the other two vertical. The first vertical machine referred to consists of an upright perforated metal casing with transverse partitions which divide it internally into three chambers, made to communicate by openings covered with valves which regulate the quantity of grain passing down from one chamber to another. Disposed concentrically within the cylinder and projecting below it, is a vertical shaft, which is driven by a pair of bevel tooth wheels, one of which is fixed on its lower end that projects downward from the cylinder, and fixed upon the shaft are three drums, one in each chamber. The drum in the upper chamber has a rasping surface, the surface of the next below is roughened like a file, and the surface of the drum in the lower chamber is hellically grooved. Between the circumferential surface of the drums and the interior of the cylinder, there is a narrow annular space where, as the grain passes down, it is operated upon by the prepared surfaces of the drums. The grain descends from a hopper and is fed into the upper chamber in quantity regulated by a spiral vane, which revolves in the feeding passage, the grain being damped as it passes through the passage by a sprinkling apparatus



above. Maize should be steeped before it is submitted to the operation of the machine.

In the second machine, beaters instead of drums are introduced into the lower chambers, and each machine is provided with a blower to winnow the grain as it falls therefrom.

The casing of the horizontal machine is made in two parts hinged together. This machine although capable of operating on cereals, is more especially adapted to the decortication and cleaning of oleaginous seed.

[Printed, 19d. Drawing.]

A.D. 1863, October 1.—No. 2407.

NEWTON, WILLIAM EDWARD.—(*A communication from Amasa Howe.*)—This invention, relating to the construction of rice and other grain-cleaning machines in which the grain is cleaned by the trituration or friction of the grains rubbing against and past each other, consists in employing for the purpose a cylindrical case, which is cast in two longitudinal halves or parts hinged together, is open top and bottom, and mounted vertically upon a hollow frame. The two parts of the case are cast, with respectively at equal distances apart, a number of transverse enlargements which form when the parts are together a series of annular recesses, in each of which there is placed a metallic disc, capable of moving freely up and down. These discs are supported by cross bars which pass transversely through the several annular recesses, one under each disc, the ends of the bars passing out through the sides of the cylinder, and resting upon springs, the reaction of which support the discs, and impart to them a constant tendency to rise when pressed upon by the grain, which is forced downward through the cylinder by a series of short archimedian bladed screws, fixed upon a revolving shaft that passes through the centre of the discs, there being one screw between each successive disc.

"When starting the apparatus the discs are all at their highest position, and thus divide the cylinder into a series of chambers. As the grain accumulates in the uppermost chamber the screw passes down the grain, thereby causing the disc to yield, and allow it to escape over its periphery into the chamber below. In like manner the grain gradually

“ accumulates in the second chamber, and forcing down the  
“ second disc escapes into the chamber below, and so on  
“ throughout the series until it is discharged at the bottom  
“ of the apparatus. While thus passing through the apparatus  
“ the grain is subjected to considerable friction, which can be  
“ regulated by adjusting the pressure of the springs that  
“ carry the discs, and by this friction of grain against grain  
“ the cuticle is ground off the seed, and falls out of the  
“ apparatus in the form of dust with the cleaned seed. This  
“ seed or grain when screened of the dust is ready to be  
“ passed through a polishing machine, which fits it for the  
“ market.”

[Printed, 10d. Drawing.]

A.D. 1863, October 5.—No. 2439.

PEPPER, ROBERT. — This invention relates to a machine adapted to the purpose of expressing the residuum liquor from spent hops, which is also stated to be suitable for pressing or crushing all kinds of grain, seeds, and fruits. The hops taken from the “hop beck” are placed in a hopper fixed in front of the machine. “The lower part of the hopper contains a fan, or  
“ circular toothed spindle, or cog wheel, or drum, by the revolution of which the hops are driven or fed between two rollers, and works loosely in bearings in the standards, being one on the top of the other; the upper roller is grooved pressed down upon the lower roller by a spring regulated by a hand wheel and screw. The under roller has circular projections or flanges to prevent choking, and grooves to correspond with those on the upper roller, and the hops passing between the rollers become pressed or crushed, the liquor runs off between the grooves on the rollers into a funnel or trough through a strainer down a pipe to a vessel or trough where it is collected, and the crushed hops fall over a spout on the opposite side of the feeding wheel, whence they are received in bags or baskets. The machine may be worked by suitable gearing actuated by manual or steam power.”

[Printed, 8d. Drawings.]

A.D. 1863, October 16.—No. 2534.

DE MASSAS, FRANÇOIS ANTOINE EDMOND GUIRONNET.—The object of this invention is to improve the construction of smut and other machines adapted to the cleansing and peeling of grain and seeds.

“ A drum having a rough surface and capable of revolving  
“ is fitted within a slightly inclined fixed casing, which has  
“ on its inner surface three sets of brushes of graduated  
“ strength or hardness; the first or hardest set consists of  
“ wires surrounded by or combined with bristles or like  
“ material, each cluster of wires having a cluster or number of  
“ such bristles or material around it; the next or softer set is  
“ of French whisks, or other fibre; and the third or softest set  
“ of cocoa-nut fibre or other fibre softer than the second set;  
“ between the second and third set is a surface of wire gauze.  
“ This arrangement of brushes and wire gauze is preferably on  
“ the lower portion of the inner surface of the casing, while on  
“ the upper portion thereof is only a set of brushes of the  
“ first description (wire and bristle or the like) combined with  
“ or having next to it a wire gauze surface. In smut machines the whole inner surface of the casing may be fitted,  
“ as just described, for the upper portion, that is, with the  
“ wire and the bristle or like brushes and the wire gauze on  
“ both upper and lower portions is composed of wire of  
“ angular section, and so disposed that the web, instead of  
“ the warp may lie in the direction of the length of the  
“ casing.”

At the lower part of the feed passage are placed inclined gratings and screens, the first detaining stones and large substances or impurities, and the latter only permitting the passing through of dust and other small matters and particles, whilst the grain rolls off the screen through a passage into the casing of an Archimedian screw feeder, and is damped during its progress by water dropping from a pipe. The first set of brushes as the grain passes in a damp state through the drum or cylinder, “ peel off the skin,” and the others rub and polish, thus removing the ligneous portions and dirt, and leaving the bran.

[Printed, *sd.* Drawing.]



A.D. 1863, November 14.—No. 2843.

ELLISON, JOSEPH.—(*Provisional protection only.*)—The object of this invention relating to “silk reel” flour dressing machines, is to effect a more perfect separation of all the flour from the bran, and thus obtain more flour from a given quantity of wheat. According to the statement of the inventor this result is attained, by affixing to the inner surface of a polygonal frame or silk wrapped reel, spikes or “pegs of iron, wood, or other suitable material of any desired length and at any desired ‘pitch.’ By the system now in use the bran becomes curled, and consequently carries away a certain portion of flour with it, but by my improved plan the curling is prevented. These spikes or pegs separate the particles of ground wheat during the revolution of the reel, and cause a more perfect performance of the operation, thus increasing the yield of flour.”

[Printed, 4d. No Drawings.]

A.D. 1863, November 20.—No. 2926.

BONNEVILLE, HENRI ADRIEN.—(*A communication from Alphonse Louvel.*)—This invention relates to the process of preserving grain, flour, and other substances, and to the apparatus employed, which produces a vacuum more or less perfect in the cylinders or receptacles which contain the material and substances under operation, such cylinders being of sufficient strength to bear the external pressure of the atmosphere. The apparatus employed to produce the vacuum consists of a boiler or vessel hermetically closed, and from which has been expelled the aeriform contents by a jet of steam, which is afterwards condensed by applying to the boiler or vessel, cold water externally. The vessel being thereby exhausted of its aeriform contents, is placed in communication, by means of pipes and suitable taps or valves with one or more of the cylinders containing the grain, flour, or other substances, and as soon as the passage is open, a principal portion of the air contained in the preserving cylinders is drawn into the exhausted boiler, and by repeating the operation, the substances in the preserving cylinders are left in a vacuum, which may also be produced mechanically by an air pump.



“ The effect of the application of the vacuum to reservoirs  
 “ containing grain, flour, meal, and similar matters, is to  
 “ kill the insects which devour the latter, and to prevent  
 “ fermentation and spontaneous or other combustion, causes  
 “ which in a short space of time may destroy such immense  
 “ stores of the substances in question.”

[Printed, 8d. Drawing.]

A.D. 1863, December 12.—No. 3138.

WILSON, JOHN CHARLES. — (*Provisional protection only.*) —  
 This invention relates to the construction of machinery adapted  
 to the process of unhusking grain and other seeds, which process  
 instead of being performed by what is stated to be the  
 tedious operation of cumbersome stampers or by millstones  
 which are difficult to adjust, keep in order, and liable to break  
 the seed, is effected “ by means of a revolving and a fixed disc  
 “ of perforated tin or other hard metal plate, the rugged edges  
 “ of the perforations effecting the desired purpose. The  
 “ cheapness of the tin plate renders it well suited for producing  
 “ an economical machine for general use, while its hardness  
 “ is sufficient to render it very durable. The machinery  
 “ is constructed as follows; a horizontal cast-iron disc with its  
 “ top surface covered with perforated tin plate is fastened to  
 “ the top of a vertical shaft and made to revolve quickly by  
 “ means of suitable gearing worked by hand or driven by  
 “ power. Placed above this revolving disc & at a small distance  
 “ from it, varying according to the length of the material to  
 “ be unhusked, is a fixed disc securely attached to the framing  
 “ of the machine, & with its under side also covered with  
 “ the perforated tin plate, so that the two perforated surfaces  
 “ are opposite to each other. By means of a feeding hopper  
 “ attached to the fixed disc, the material to be unhusked is  
 “ fed in at the centre of the revolving disc, & carried by its  
 “ centrifugal force between the two discs where the unhusking  
 “ operation is done. The cleaned material and husks fall  
 “ down below the revolving disc into a basin prepared to receive  
 “ them, and are swept out of the machine by a scraper  
 “ fastened to the under side of the said revolving disc. Instead  
 “ of the discs cones may be used, but I find the discs to be  
 “ preferable.”

[Printed, 4d. No Drawings.]

A.D. 1863, December 15.—No. 3161.

SEARS, HENRY BEAUFORT.—This invention relating to the process of cleansing or dusting rice and other grain, and to the apparatus employed, consists in:—

1st. Passing the rice or grain “between two surfaces of  
“ sheepskin with the wool on, or other material or fabric  
“ having analogous properties in contact with each other,  
“ motion being imparted to the one surface, or to both, so as  
“ to cleanse or dust the rice or other grain, and at the same  
“ time to pass it through from between the surfaces as it  
“ becomes cleansed.”

2nd. The apparatus employed comprises “a revolving drum  
“ covered with sheepskin with the wool on, or other material  
“ or fabric having analogous properties, is placed in contact  
“ with a board or other surface, also covered with sheepskin  
“ with the wool on, or other material or fabric having analogous properties, the degree of contact between the board  
“ and the drum being regulated by means of screws or other  
“ suitable contrivances. The revolving drum and fixed surface are placed inside a closed casing, and the rice or other  
“ grain is conducted between them through a hopper attached  
“ to the upper part of the casing; after having passed between  
“ the two surfaces, and having thereby been effectually  
“ cleansed from dust, the rice or other grain passes from the  
“ casing through a spout. The dust as it is removed from the  
“ rice or other grain is drawn from the casing by means of  
“ an exhaust fan communicating with the casing by means  
“ of a passage or pipe. This removal of the dust is greatly  
“ assisted by the centrifugal action of the drum, the pile surface of which, after taking up the dust from the grain,  
“ throws the former off in the direction of the exhaust. In  
“ some cases instead of the fixed surface, I employ an endless  
“ band of sheepskin with the wool on, or other material or  
“ fabric having analogous properties, to which band motion is  
“ imparted in the reverse direction to that of the drum, or it  
“ may have a comparatively slow motion imparted to it in  
“ the same direction as that of the drum.”

[Printed, 10d. Drawing.]

A.D. 1863, December 30.—No. 3297.

PATTERSON, JOHN.—The object of this invention relating to apparatus adapted to grinding, crushing, and hulling or shelling various kinds of vegetable produce, and also to grinding minerals and hard substances, is to effect these operations by means of circular toothed discs or plates having their centers of motion relatively eccentric, without the choking or filling up to which mills operating in a similar manner are liable. To this end, instead of employing “two perfectly flat plates or grinding surfaces, and placing them opposite to each other, as usual, in parallel planes, so that the two surfaces cover each other or thereabouts, it is proposed to make the grinding surfaces somewhat conical or bevelled, and to place them in such a position that they can only be brought into contact with each other on one side of their respective centres in a line at right angles to a plane, passing through the centres of both plates; a space is thus left between the two surfaces on the opposite side of their centres wherein one or more scrapers can be fixed. The substances to be operated upon in place of being fed in through an eye in the centre of one of the plates are fed directly into the angular space formed between the grinding surfaces, where they are nearest in contact, and are thus subjected to a crushing action in addition to the wrenching action of ordinary eccentric mills.”

[Printed, *sd.* Drawing.]

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1864.

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A.D. 1864, January 26.—No. 220.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Edouard Honoré Vittecoq.*)—This invention relating to the construction of bolting mills or machines, which are made to operate without the use of beaters or the other appliances usually employed to strike the bolting cloth for the purpose of keeping its meshes free, consists in introducing and causing to circulate freely with the meal and flour in the bolting mill,



coarse bran and crushed grain which is said to cool the meal and flour, and prevent its attachment to and clogging of the bolting cloth, which in consequence may be of finer texture. The patentee says :—" I lead the bran and coarse flour from  
" the last shifting or bolting apparatus through a channel or  
" pipe to the bottom of an endless chain carrying cups or  
" buckets ; another channel or pipe also leads the crushed  
" grain from the millstones to the bottom of the endless  
" chain. The endless chain delivers the bran, coarse flour,  
" and crushed grain at top to an Archimedian screw, in  
" which they become cooled ; the screw is surmounted by a  
" hopper by which bran or crushed or uncrushed grain may  
" be supplied to the screw in any required quantities. The  
" screw delivers the bran, flour, and grain through a pipe or  
" channel to a first bolting or sifting apparatus which bolts  
" or sifts the finer flour or meal, while the coarse flour and  
" bran pass on through a pipe or channel to a second bolter  
" or sifter. This second bolter or sifter bolts or sifts the finer  
" of the remaining flour, which falls on to a second archi-  
" median screw and becomes cooled, falling at the further  
" end of the screw through a pipe or channel into the channel  
" or pipe herein-before mentioned which leads to the endless  
" chain of cups. The coarsest flour and bran may then pass on  
" to the last bolter or sifter, in which the pollen and lumps  
" become separated and are delivered to suitable receptacles.  
" I do not limit myself to the employment of three bolting or  
" sifting apparatuses, as more or less may be employed as  
" considered desirable."

[Printed, 8d. Drawing.]

[A.D. 1864, February 29.—No. 501.]

GEDGE, WILLIAM EDWARD.—(*A communication from Honoré Dumas, junior.*)—This invention relates to the constructional arrangements and details of millstones and accessaries, with a view to obviate the generation and accumulation of frictional heat, and thereby be enabled to work at a higher speed, and as a consequence produce more and better flour in a given time. To this end the invention consists :—

1st. In making completely through the upper or running stone, one on each side the center midway between the eye



and the circumference, two rectangular passages, in which are fitted revolving ventilators, which force air downwards through the passages to the grinding surfaces.

2nd. The fans or ventilators are each formed with four blades or wings of sheet iron fixed laterally projecting on the four sides of a square shaft, rounded at the ends to run in wooden bearings fixed on the stone. Each shaft carries a pinion that gears into a crown wheel adjustably fixed concentrically above the stone to the mill casing, and by this means, the pinions being only one sixth the diameter of the crown wheel, the fans are compelled to make six revolutions to every single revolution of the running stone, contrivances being arranged to regulate the height of the crown wheel in relation to the height of the stone, and to be able to remove with facility the fans and fittings when required.

[Printed, 8d. Drawing.]

A.D. 1864, March 29.—No. 779.

NEWTON, WILLIAM EDWARD.—(*A communication from James Henry Thompson, and John Hedges Lidgerwood.*)—(*Provisional protection only.*)—This invention relates to the construction of a machine for hulling rice, coffee, wheat, and other cereals, and which operates upon the grain by means of one or more corrugated frustums of cones, disposed concentrically within a case or shell of corresponding form, the object being to remove the hull or cuticle expeditiously without breaking or crushing the grain. The friction caused by the grains rubbing against and past each other, is depended upon for effecting the process more than the direct contact of the grain against the moving surfaces of the apparatus.

The case is made of cast-iron and inverted; a vertical shaft which carries the hulling cone or cones passes concentrically through it, and resting in a suitable step beneath, is kept in position by an upper bearing attached to a cross bar. The rice passes downward in the narrow space formed between the frustums or hulling cones and the interior of the casing, and this annular space is more contracted towards the base of each cone. On the upper part of each cone are two prominent parts which are lost in the spiral flutings of the cone, and are for the purpose of forcing the grain downwards and keeping it *in constant motion*, until it is discharged in a finished state at

the bottom of the apparatus, through passages in which may be gates or other contrivance for detaining the grain until the operation is complete.

[Printed, 4d. No Drawings.]

A.D. 1864, April 19.—No. 977.

BURSTALL, GEORGE.—This is an invention of apparatus contrived for separating the seed from cotton, and for partially removing the husk.

The first part of the process consists in passing the material through a cylindrical screen, made of strong wire cloth at the upper end, and altogether about five feet long and sixteen inches in diameter, the lower end being covered with perforated zinc, through which the seeds pass freely, and leave any pieces of wood, stone, or other matter to pass out at the end of the cylinder, the dust and dirt being first separated from the material by beaters revolving inside the cylinder at a high speed, pass through the wire cloth. After the screening process, which in some cases need not be resorted to, the next stage of the process is effected by a circular stone mounted on a horizontal axis. "This stone is from three to  
" four feet in diameter, and is preferred to be of Derbyshire  
" Peak or other hard stone. This stone is caused to re-  
" volve at the rate of about three hundred revolutions per  
" minute, whilst the case revolves at the rate of about ten or  
" twelve revolutions in a different or in the same direction.  
" This case is composed of a strong metal frame covered at  
" the sides and circumference with strong woven wire, which  
" covering admits of the passage of the cotton (and dust if  
" there be any) whilst the meshes or spaces retain the cotton  
" seeds. There is a space of about three and a half inches  
" between the sides and circumference of the stone and the  
" case. The case is filled to about two-thirds of its capacity  
" with cotton seed from which it is desired to separate the  
" cotton, and the opening into the case is closed; after some  
" minutes, generally about twenty or more, the cotton is for  
" the most part removed, and has passed through the meshes  
" or spaces between the wires of the case. . . . The seed  
" then falls on to a flat screen composed of two or three sieves  
" or surfaces of perforated zinc, the perforations being of diffe-  
" rent sizes, the first to admit of the smaller broken pieces

“ to fall through, the second to allow the larger pieces to fall through, and then the remainder will pass over the end of such screen. This screen is vibrated at the rate of about two hundred strokes per minute. The husks and seed are subjected to the action of a blast as they descend from the screen.”

[Printed, 4d. No Drawings.]

A.D. 1864, June 15.—No. 1481.

HOOKE, GEORGE SPENCER.—This invention relating to the constructional details of grinding mills, refers more particularly to the method contrived for fitting the running stone to the mill spindle, which is effected by means of wedge pieces, disposed on the four opposite sides of the spindle in contact with surfaces formed on the upper ends of long draw bolts. These surfaces are wedge-formed on the side which comes in contact with the wedge pieces, and when all is in position, by means of nuts on the lower ends of the bolts, the latter are drawn down and the wedge pieces are secured. This mode of fixing (it is stated) “ secures great steadiness of motion, and ensures the fitting of the spindle with very great nicety.” Three of the intermediate spaces between the bolt heads and wedge pieces are used for depositing cotton and tallow, wherewith the mill spindle is lubricated, and the fourth space is used to facilitate the operation of greasing or cleaning the spindle.

[Printed, 8d. Drawing.]

A.D. 1864, June 16.—No. 1505.

MORRIS, GEORGE BRADFORD, PRICE, WILLIAM BRIGHT, and GEORGE, JOHN LANE.—The object of this invention relating to the constructional details of machines designed for the process of bolting and dressing flour, is to insure an equable distribution of the meal over the entire surface of the bolting cloth, and to discharge at the end of the bolter extraneous matters contained in the meal, thereby not only lessening the wear of the cloth, but expediting the operation. To effect these results the inventors say:—

“ Instead of using the ordinary shallow net at the feed end of the bolter to screen and distribute the meal as it is fed to the bolter, we insert inside the reel or framing of the bolter



“ a taper tube of netting extending from end to end thereof  
“ or nearly so. This tube is open at both ends, and for convenience is composed of longitudinal sections sewn together,  
“ the radial arms of the reel passing between the seams. The  
“ tube of netting is held open by metal rings at its extremities,  
“ the larger ring being provided with tenter hooks on to  
“ which the netting is caught, the tension of the tube is maintained at various points by means of strings attached to the  
“ reel. As the meal is fed into the bolter it will be distributed over the inner surface of the bolting cloth, and any  
“ extraneous matters entering with the meal will be discharged at the tail end of the tube,” instead of as heretofore accumulating in the netting and impeding its action.

[Printed, 8d. Drawing.]

A.D. 1864, June 21.—No. 1536.

BONNEVILLE, HENRI ADRIEN.—(*A communication from Charles Krempff, Louis Kuhn, and Georges Nicolas Schoumert.*)—This invention relating to the process of grinding and pulverising grain, refers more particularly to the manner in which the grinding stones of a pair of mills are made to operate, and the way in which they are mounted. Instead of as usual one stone being fixed and the other stationary, both the upper and lower stone of each pair are caused to rotate, thereby (it is stated) “doubling the speed and the grinding power.” A mill comprising two pairs of millstones is described. The upper stone of each pair is mounted on a solid vertical shaft, and these shafts pass through tubular shafts, whereon the lower stones are mounted. Each shaft carries a toothed pinion, separately engaged by two spur wheels on two intermediate shafts mounted lineally one above the other on the same vertical line, each shaft carrying a bevel pinion, and both these pinions gear with a spur bevel fixed on a horizontal shaft, through which the motive power passes, and by this means both stones are caused to revolve simultaneously in contrary directions. Each pair of millstones is inclosed by a drum or casing, and disposed on each casing is a hopper. The whole arrangement is surrounded by a raised gallery where the sacks are placed and the attendants on the mill stationed. Connected with each mill there is a bolter &c.



respectively direct from the casings. These according to the drawing appear to be mounted upon the lower part of the framework, but they are not described.

[Printed, 8d. Drawing.]

A.D. 1864, September 10.—No. 2212.

GOODBODY, LEWIS FREDERIC.—This invention relates to the constructional details and working accessories of mills engaged in the manufacture of flour, the chief feature consisting in first passing the grain through a current of steam so arranged, that the grain is thereby damped or moistened to any degree required. The process (it is stated) would in itself “be injurious to the strength of the flour,” and therefore to counteract its effect, the flour is re-dried by passing it through hot air, the same air being also used for keeping dry the silk or wire flour dressing machines, which are thus enabled to do a larger amount of work.

The steam moistening apparatus “consists of a casing or trough placed in the ‘stock hopper,’ and in which a screw bladed shaft or some such similar piece of mechanism is arranged, which by its revolution causes the grain to travel along the trough, the grain itself being admitted at one end from a spout, through which it falls direct from the cleaning machinery, an opening being made in the further end of the trough through which the grain falls into the ‘stock hopper.’ A steam pipe communicates with the trough or casing at or near to the place where the grain is admitted, and steam thus flows amongst the grain during its passage through the trough or casing, which in it becomes effectually damped or moistened. When the flour is ready to be dried it is passed through a medium of heated air as it travels in the finished state from the silk or ‘wire dressing machine,’ the remaining part of the process being the same as that at present employed. The flour is dried by means of causing it to pass through a chamber heated by hot water or steam pipes,” or otherwise.

[Printed, 10d. Drawing.]

A.D. 1864, November 3.—No. 2718.

DAVIES, SAMUEL.—(*Provisional protection only.*)—This invention relates to an arrangement of apparatus combining

a grinding mill with such a portable thrashing machine, as screens and delivers the corn in three named quantities, viz., "best corn, seconds or tail corn, and thirds," the mill being intended to grind the seconds or tail corn, and deliver it as flour in a receptacle beneath.

"At the rear end of the thrashing machine is a revolving screen, through which the small or 'tail' corn drops into a hopper which conveys it to the mill, the latter being of any ordinary construction, and bolted or otherwise fixed to the frame of the thrashing machine. The mill may be driven in any convenient manner, but I prefer to drive it by means of a strap passing round a pulley fixed on one end of the first 'blower' shaft. If a greater quantity of flour than will be thus produced should be required, a portion of the 'best corn' may be fed into the mill with the 'seconds.' The 'thirds' will be too full of chaff and other impurities to be fit for grinding. The framing of the mill is so arranged that it may be readily detached from the thrashing machine when flour is not required, and the 'seconds corn' will then be delivered into a sack as usual."

[Printed, 4d. No Drawings.]

A.D. 1864. November 8.—No. 2768.

HURT, JOHN, and TONGE, HENRY.—(*Provisional protection only.*)—This invention is intended to supply the means or apparatus for removing ground corn as it falls from the millstones. Heretofore (it is stated) "one or two spouts or openings have been provided or formed at the edge of the bed stone for the ground corn or meal to pass away through, the said corn being driven or carried round to the said opening or openings by the action or rotation of the running stone."

The invention consists "in providing or forming a universal spout or continuous opening around the whole circumference of the bed stone, so that the ground corn or meal is continually passing from the grindstones at every part of their circumference, and is conducted from thence by suitable spouting placed underneath."

[Printed, 4d. No Drawings.]

A.D. 1864, November 12.—No. 2824.

WOODS, EDMUND FREEMAN, and COCKSEGE, JAMES SAMUEL.—(*Provisional protection only.*)—This is an invention of apparatus contrived for feeding millstones. When mixed meal is required, two hoppers are adapted to a pair of millstones in such manner, that the quantity of grain or seed delivered or fed from each hopper, may be regulated in accordance with the proportionate extent to which it is desired to have the meals mixed. Each feeding hopper is provided with “a feed iron to raise and fall the shoe at pleasure, and  
 “thus to vary the feed, by which means any two kinds of grain,  
 “pulse, or seed may be more conveniently and intimately mixed  
 “when grinding than heretofore. This combined arrangement may also be employed when grinding only one of the  
 “seeds by a moving slip attached to the shoe of one of the  
 “hoppers or feeders, and thus allow the contents of such hopper  
 “or feeder to be distributed on the top or edge of a running  
 “stone through an eye or opening in the vat under the slip,  
 “and the meal or seed from the hopper thoroughly and  
 “intimately mixed with the meal as it leaves the surfaces of  
 “the stones, a brush in such case being applied inside the vat  
 “or case to keep the top of the stone clear.”

[Printed, 4d. No Drawings.]

A.D. 1864, November 16.—No. 2862.

AUBIN, JULES.—This invention relates to the construction of combined grinding and bolting surfaces adapted to corn grinding mills, and composed of stone and metal perforated or woven. The inventor says:—“I take an iron plate with a  
 “number of iron boxes cast upon it, which boxes constitute hollow bolting compartments. The stone proper is set upon this  
 “plate, occupies the centre, and fills the interstices between  
 “the hollow compartments, and is the grinding agent. Each  
 “compartment forms a kind of channel, and is covered at the  
 “top with a metallic or other cloth to act as a sieve and afford  
 “passage to the flour. Such a millstone answers at the same  
 “time for grinding, bolting, and for aërating the flour. The  
 “top of each metallic compartment is just below the level of  
 “the stone proper, and in order to admit of adjustment upon  
 “the wearing of the stone, I prefer to form the compart-

“ ments in two parts, the upper of which is capable of being  
“ lowered by screws upon the lower part. In the rotation of  
“ the upper stone placed over my improved millstone the  
“ grinding takes place in the ordinary manner, and the flour  
“ after passing through the cloth or sieve on the metal com-  
“ partments falls therein, while the bran or envelope is pro-  
“ jected from the circumference of the stone.”

[Printed, 8d. Drawing.]

A.D. 1864, November 29.—No. 2970.

MAYNARD, ROBERT.—This invention relates to a combined arrangement of grinding and crushing apparatus with the portable chaff engines described in the specification of a former patent, granted to this inventor and dated March 3, 1856, No. 538, the said chaff engines being fitted with a riddle to separate the perfect from the imperfectly cut chaff. The grinding and crushing apparatus now supplemented, may be of any description suitable for the purpose, the object being to combine with a portable thrashing machine or engine, the operations of cutting, grinding or crushing, in such manner that all the different operations may if required proceed simultaneously.

Using in combination with such chaff engines, an endless web or chain, which passes over a revolving drum and is furnished with either prongs or buckets, for the purpose of carrying up to the height required, straw or other produce.

[Printed, 10d. Drawing.]

A.D. 1864, December 5.—No. 3025.

GOODIER, JAMES, and LEE, THOMAS.—(*Provisional protection only.*)—This invention relating to the process and apparatus employed for grinding grain, refers to that class of mills which operate with grinding stones disposed horizontally, and it has for its chief object, the conveying away from the inside of the millstone cases, the steam generated by the heat produced during the process of grinding by the friction of the grinding surfaces.

The inventors say:—“ We affix or attach to the running  
“ stone, in any convenient way, one or more arms, vanes,  
“ blades, or projections, to cause a circulation of air, and con-  
“ nect a pipe or spout or several pipes or spouts into the mill-



“ stone case, preferably led directly upwards therefrom, to  
“ carry away the steam and hot air. Either the upper or  
“ nether stone may be made to rotate, we prefer the former.  
“ In some modifications, the case at the eye of the upper  
“ stone would be closed, in general practice however it would  
“ be open.”

[Printed, 4d. No Drawings.]

A.D. 1864, December 5.—No. 3027.

YEARSLEY, JOHN, and TIMBRELL, EDWARD.—This invention, relating to an apparatus designed for the process of cleaning rice, consists in employing for the purpose a drum covered or coated with a particular composition, in lieu of the stones ordinarily employed in rice mills. In order that the composition may thoroughly adhere to the surface of the drum the latter is roughened, or if made of wood, pegs, pins, or nails are inserted, or other means for affording a sufficient hold to the composition are employed. The following ingredients compounded in or about the proportions named form the composition, viz., two parts of emery, one or two parts of Roman cement, and as much glue as will form when mixed therewith a plastic mass.

The glue is dissolved by heat, and gradually stirred whilst the ingredients are added, and the composition is applied to the surface of the drum in a heated state, a coating of hot glue having by preference been previously applied. On cooling the composition hardens and the drum may be used at once, but it is better first to allow the composition time to dry. Powdered or ground glass may be mixed with the emery or be used entirely as a substitute for it.

[Printed, 8d. Drawing.]

A.D. 1864, December 16.—No. 3118.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Edmond Paul Henri Gondouin.*)—This invention, relating to the construction of machinery for decorticating or separating the kernel from the shell of cotton seeds, consists in fitting the machine with two cylindrical rasping surfaces, one within the other, and in giving motion either to one or both. The operation is effected by passing the seed between these sur-

faces, which rub, tear off, or remove the envelope from the kernel, the surfaces being made either level, concave, or otherwise, and the motion either revolving, continuous, or reciprocating longitudinally. The patentee describes the construction of a machine with revolving surfaces as follows:—"I place in a frame properly supported a metal cylinder pierced with numerous holes from the outer towards the inner side, so as to form a rasping surface. This cylinder is placed at a slight angle from a horizontal line. I place a second cylinder within that just described, but with the rasping surface formed on the outside; the inner is placed at a greater inclination than the outer cylinder, in order that their surfaces may approach nearer at the lower end. The seeds are fed from the upper end of the cylinders by means of a hopper, and by the rotation of the inner cylinder, aided by the incline, they are caused to travel to the lower end of the machine. At first any cottony substance that may adhere to the shell is stripped from the seeds, and as the surfaces of the cylinders become nearer to each other the shell is removed, and according to the distance between the cylinders so is the kernel simply separated or reduced to a granular state. On issuing from between the cylinders the matters may be received upon an inclined sieve, to which a sifting motion is imparted. The kernel falls through the meshes of the sieve, the shell and cottony parts slide down or may be collected from the sieve. The kernel is in a fit state for the oil being expressed, and the cottony parts may be used in paper making."

[Printed, 8d. Drawing.]

A.D. 1864, December 17.—No. 3135.

PRICE, FREDERICK.—(*Provisional protection only.*)—This invention of auxiliar apparatus adapted to corn and other mills of the horizontal class, refers to the mode of adjusting and working the scrapers and brushes, which are carried slowly round the millstones for the purpose of removing and preventing accumulations within the millstone case of the flour or other ground material under process. In applying the invention to a mill in which the upper stone is driven by a vertical shaft passing through the eye of the lower stone, it

is preferred to sink the lower stone half way into the hurst.

The supply pipe from the hopper is introduced through a short pendent tubular shaft, that passes through and revolves in a bearing fixed on the center of the millstone case. Fixed, projecting laterally within the case from the lower end of this shaft, are one, two, or more arms which extend horizontally beyond the circumferential edge of the running stone, and carry at their outer ends pendent pieces to which the brushes and scrapers that work round inside the millstone case are attached, the requisite slow rotary motion being communicated by gearing or otherwise to the upper end of the tubular shaft, which projects above the bearing. The supply spout and hopper may if preferred be made to revolve with the tubular shaft.

[Printed, 4d. No Drawings.]

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## 1865.

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A.D. 1865, January 5.—No. 38.

BUCHHOLZ, GUSTAV ADOLPH.—This invention relating to the process of hulling grain and reducing granular substances, is supplementary to a prior invention of a similar nature, for which Letters Patent dated November 19, 1862, No. 3113 were granted to the present inventor.

In the hulling machinery formerly described, blades attached to the drums are used for stripping the bran off the grain, but in place of fixing the blades in the manner formerly described, it is now proposed to form longitudinal dovetail projections at the back of the blades and secure them to the rotating drums in the vertical hulling machine in corresponding annular dovetail recesses, cardboard being used as an intermediate packing to regulate their distance apart. In the horizontal hulling machine formerly described, the blades are fitted and secured in dovetail recesses in the same manner; the case and drum are made in sections so connected as to *allow the bran to escape*; the case is free to rotate irrespective

of the drum, and there are several modifications in the minor details described and exhibited.

In the machine employed for manufacturing semolina, instead of the vertical conical cutting mill formerly described, rollers of a peculiar construction and furnished with blades, are substituted for the purpose of more effectually separating the remaining semolina from the hulled, cut, and crushed wheat, and those particles of the grain which adhere to the bran after the second separation of the semolina, are afterwards operated upon by a pair of grooved cutting rolls, mounted and geared to revolve at different speeds.

[Printed, 2s. 4d. Drawings.]

A.D. 1865, January 9.—No. 64.

JOHNSON, JOHN HENRY.—(*A communication from Nathaniel Greene and Walter Clement Key.*)—This invention relates to the process of cleaning rice, coffee, and other grain or seed, by the attrition or rubbing together, or against the sides of the apparatus, of the grains separately, as they are kept in constant motion in a vessel or mortar by what is called a propeller, which revolves inside at or near the bottom of the vessel, and operates by means of helical blades, that displace the grain continuously after the manner of a screw propeller. “It is proposed to roughen the surface of the vertical propeller shaft, or to make it of stone or other substance of a grinding or gritty nature, or to enclose the propeller shaft in a long tubular collar, or casing composed of stone or other substance of a grinding or gritty nature, or to make such part of the apparatus of metal having its surface roughened, by which means a better rubbing and cleaning action on the substances under treatment is obtained.”

By the action of the propeller the grain is forced downward continuously, and spreads radially at the bottom of the vessel in all directions towards the sides, against which it rubs, and as it rises to the surface, it falls towards the center and sinks down alongside the surface of the shaft again to the propeller, which, so long as it is required to revolve, keeps up a constant displacement and circulation of the grain until the outer skin or pellicle is loosened and separated.

[Printed, 6d. Drawing.]



A.D. 1865, January 13.—No. 115.

AGER, WILSON. — This invention relates to the process of cleaning and decorticating rice and other grain, which process is effected by what is termed “a peculiar combination of “machinery or apparatus,” consisting of “one or more stones “revolving inside a perforated horizontal cylindrical screen, “which is caused to revolve in the same direction but at a “lower rate of speed than the stone or stones, and is provided “internally with a series of ledges for carrying up a portion “of the grain to be cleaned and decorticated and allowing it “to descend again. The grain is fed into this screen by a “supply spout which opens into the centre at one or both “ends thereof, and one or both these supply spouts may also “contain an air or blast pipe which directs a current of air “through the grain as it falls from the ledges and carries off “the dust therefrom through the openings in the revolving “screen. In order to regulate the weight or quantity of “grain at any one time in the screen it is proposed to make “one or more apertures in one or both ends of the screen, “such apertures being partly closed by sliding doors. By “regulating the height of these doors, or the distance between “the top of the doors and the periphery of the screen, it is “obvious that the quantity of grain in the screen will also be “regulated, as the grain passes off continuously through the “openings left above the doors during the revolutions of the “screen. The revolving cylindrical screen is enclosed within “an outer casing into which the air and dust enter after “passing through the perforations in the screen, the dust and “dirt passing thence by a spout to any convenient receptacle. “It will thus be seen that the process is continuous, the “cylinder or screen having a constant passage of grain “through it, but at the same time it always retains a certain “regulated quantity of grain according to the position of the “regulating discharge doors.”

[Printed, 10*d*. Drawing.]

A.D. 1865, January 24.—No. 205.

RICHERS, RICHARD ROBERT, and WATTS, CHARLES JAMES.—  
*This invention relates to the constructional arrangements and*

working parts of such grinding mills as operate by means of a rotating cylinder and a fixed "concave."

1st. A horizontal corrugated cylinder, acting in conjunction with a concave similarly corrugated, but running in lines or zig-zags aslant from the axial line of the cylinder.

2nd. Dividing the concave into two or more (by preference three) longitudinal parts, for the purpose of effecting their more easy adjustment in relation to the external or grinding surface of the cylinder.

3rd. Combining with such mills a flour dressing machine, which is mounted in the frame work beneath the mill. The combined apparatus is intended to be portable, and may be mounted on wheels or otherwise.

4th. So arranging the hoppers of such mills internally, that by means of partitions, two or more kinds of grain may be introduced and discharged into the mill by the feeding rollers, so as to become mixed in any desirable proportions.

5th. "Forming the concave and the cap in one casting, and  
"fixing the same to the frame, combined with a mode of  
"mounting the cylinder so as to admit of its being moved  
"lengthwise in order to adjust the grinding surfaces to the  
"required distance apart, or, the concave and cap may be  
"made separate, and each fixed to the frame. Also the  
"concave and cap may be mounted so as to admit of adjust-  
"ment lengthwise instead of the roller being moved.

[Printed, 10d. Drawing.]

A.D. 1865, January 25.—No. 211.

STEVENSON, ANTHONY.—(*Provisional protection only.*)—This invention relating to mills of the horizontal class and constructed for grinding and pulverizing grain and other substances, refers to the means employed in the ventilation of such mills. In order to accomplish this, one or more pieces of metal or other material are attached to the millstone case, projecting inwards at such an angle to the running stone, as to intercept the movement of the heated air current which follows the stone, and direct it into pipes or spouts leading to a chamber if charged with "stive," or into the atmosphere if otherwise. "The millstone case, instead of having projecting pieces attached thereto, may itself be made of  
"angular or other form to intercept the heated air. The

“ eye of the stone may be either closed or open, but I prefer  
 “ the former, and to admit a sufficient quantity of atmo-  
 “ spheric air into the millstone case I make openings (where  
 “ necessary) in the said millstone case and cover or protect  
 “ the same by louver boards or other means.”

[Printed, 4d. No Drawings.]

A.D. 1865, February 6.—No. 333.

WILKINS, WILLIAM PICKFORD.—This invention relates to the constructional details of that class of mills employed for grinding grain, that operate by means of a cylinder revolving within the hollow of a fixed concave, the external surface of the cylinder, and the hollow surface of the concave respectively, being furnished with teeth or otherwise roughened for grinding.

It consists in:—

1st. Regulating the working distance between the grinding surfaces by means of lugs cast on the concave, and screws passing through the top plates; by this means the approach of the concave to the teeth of the cylinder may be regulated, and actual contact prevented, whilst their requisite proximity is maintained for the finest grinding. Other means may also be resorted to for regulating the working distance apart of the grinding surfaces.

2nd. So arranging the teeth round the roller or cylinder in spiral or winding lines, that the grain will be detained in the mill sufficient time to effect the grinding process.

3rd. Instead of the wooden frames usually employed, mounting the operating parts of the mills in frames of iron, cast in one piece with some of the details, the general arrangement of the mills being in most respects similar to other mills of the same principle of construction.

[Printed, 10d. Drawing.]

A.D. 1865, February 28.—No. 561.

CLARK, WILLIAM.—(*A communication from Gustave Lataste, Christophe Ours Bullo, and Clément Montoille.*)—This invention relating to the process of hulling or decorticating grain, and to the apparatus employed, consists in first soaking the



grain preparatory to the operation for three or four minutes for the purpose of softening the husk. The apparatus employed in the subsequent process consists in the use of:—

1st. "A pair of wood grinding surfaces covered with an elastic material such as buff leather, for example, and also with wire gauze, one of said grinding surfaces (the lower one by preference) being rotated in order to effect the decortication of the grain."

2nd. "A fan or blower for producing a current of air at the exit of the grain for the purpose of separating the latter from the bran or husks."

3rd. "A second pair of grinding or finishing surfaces also of wood, but furnished with an elastic covering only and having a blower the same as the upper pair of grinding surfaces, by passing through which the wheat or other grain will be decorticated and separated from the bran or husks, and may then be ground in an ordinary mill. By this means from 90 to 95 per cent. of flour may be obtained according to the nature of the grain and without any of the bran which has been previously separated. The apparatus employed, as may be easily understood, will vary according to the kind and quality of the grain."

[Printed, 1s. Drawings.]

A.D. 1865, March 8.—No. 652.

TURNER, FREDERICK WILLIAM.—This invention relates to the construction of a metallic mill, adapted to the grinding of corn and other substances by means of a revolving roller, and a fixed "breastwork" or concave, which is made in two parts, respectively capable of adjustment or separate removal as may be required, the surface respectively of the roller externally, and the internal or hollow surface of the concave, being roughened, serrated, or toothed, to form grinding surfaces. This mill is arranged, in combination with a delivery screw or worm, to repeat the grinding process several times, and to be worked either by horse, steam, or other motive power, there being on the end of the roller spindle that projects outside the case which incloses the apparatus a differential speed pulley, fixed on to receive a driving band that passes round a companion pulley fixed on the shaft that actuates the apparatus.

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The process of grinding is described as follows:—

“ The corn or other matters are conducted from the hopper to a portion of the breastwork near one end, against which the metal roller partly crushes it, and during which it is carried round by the revolving roller to the screw chamber above, where it comes into contact with the screw or worm, this carries it a certain distance in a longitudinal direction in proportion to the speed of the screw, it is then again caught by the roller and crushed against the fixed breastwork or concave, and so on, the grain being gradually carried towards the delivery end, the process being repeated fifteen, twenty, or thirty times, or it may even be divided into a greater number of stages and times if required, and which will be regulated by the relative speeds of the screw or worm and crushing cylinder, which can be varied at pleasure.”

Describes the construction of horse gear suitable for driving these mills, and for other purposes.

[Printed, 1s. 4d. Drawings.]

A.D. 1865, March 16.—No. 742.

MARSHALL, JAMES. — (*Provisional protection only.*) — The object of this invention is so to combine in one machine apparatus for thrashing, dressing, and grinding grain, that they may be worked either conjointly or separately, the grinding apparatus being similar to that described in the Specification of a Patent granted to John Ross, dated April 29, 1862, No. 1252.

The invention consists in the means employed for putting the several parts into communication, and working all the apparatus conjunctively, but no claim is made when either the thrashing and dressing apparatus or the grinding apparatus are separately worked.

The revolving separating screen of the thrashing and dressing apparatus, is fixed over so as to feed the grinding mill or apparatus, and the hopper of the latter is so placed as to be able to feed the mill when it is required to be used separately. “ The means of communication between the two sets of apparatus for the purpose referred to consists of two valves, the pivots of which are fixed between apertures leading from the thrashing and dressing apparatus out of

“ the machine and other apertures leading into the grinding  
“ apparatus, so that by one simultaneous movement of the  
“ two valves on their pivots they are or may be caused to  
“ open the apertures leading to the grinding apparatus, and  
“ close the exit apertures of the threshing and dressing  
“ apparatus, and by a simultaneous movement of the valves  
“ in another direction the apertures leading to the grinding  
“ apparatus are or may be closed, and the exit apertures of  
“ the threshing and dressing apparatus opened.”

[Printed, 4d. No Drawings.]

A.D. 1865. March 30.—No. 898.

SAVORY, WILLIAM. — This invention relates to a mode of cooling the casing and other parts of grinding mills; the treatment of meal, and the dressing of flour; also to the apparatus employed.

For the purpose of cooling mills, the mill casing is made double, so as to form a thin inclosed space, through and about which a current of cold water is caused to circulate; also encircling the bed stone is a hollow ring, which is kept cool by the flowing through of cold water; the meal as it leaves the stone falls upon this cooled ring off which it is removed to a delivery spout by brushes which sweep round the stone, and after this the meal may be further cooled by causing it to pass through a cased trough also kept cool by the flow of cold water.

Before passing the ground product to the bolter, the bran is first separated from the meal by either a wire cylinder placed over the bolter case and called a bran separator, or by any screen or sifter of other form, the bran passing in a different direction to the flour and finer particles, which fall into the hopper that feeds the cylinder of the bolter, special arrangements being made for instantly regulating without stopping the machine, the feeding in of the meal, which is uniformly distributed throughout the whole length of the cylinder. The bolter cloth is secured to the reel by a leather band at each end and elastic rings of vulcanized india-rubber, and the beaters which are specially contrived and arranged, are formed with a view to prevent the puckering of or the destructive effects of any injurious friction on the bolter cloth.

[Printed, 1s. 6d. Drawings.]

A.D. 1865, May 6.—No. 1267.

HURT, JOHN, and TONGE, HENRY.—(*Provisional protection only.*)—The object of this invention relating to the process of grinding corn and other substances, is to supply means for removing from the outside of millstones the corn or other substance as it is ground. Heretofore (it is stated) “one or  
“two spouts or openings have been provided or formed at the  
“edge of the bed stone for the ground corn or other substance  
“to pass away through, the said corn being driven or carried  
“to the said opening or openings by the action or rotation of  
“the running stone.”

The invention consists “in providing or forming a universal  
“or continuous opening around the whole circumference of  
“the bed stone, so that the ground corn or other substance is  
“continually passing from the stones at every part of their  
“circumference, and is conducted from thence by suitable  
“spouting placed underneath.”

[Printed, 4d. No Drawings.]

A.D. 1865, May 15.—No. 1348.

BONNEVILLE, HENRI ADRIEN.—(*A communication from Charles Simon Olivier Martineau, Narcisse Justine, and Nicolas François Dumet-Prévost.*)—The object of this invention is to effect the cooling and ventilation of flour mills whilst in operation whereby (it is stated) the yield of the grain is increased, and the heating of the flour prevented. It consists in placing over so as to close the opening or eye of the running millstone a metallic or other plate, and placing in the eye of the stone a cylinder which is open at both ends, and through which the grain falls on to the bed stone, there being a central orifice in the plate to admit the pipe which feeds the mill, and three or more other openings to which are adapted air pipes, that convey cool air to the grinding surfaces down the annular space between the outside of the cylinder and the stone. The outer ends of these tubes are enlarged or made funnel-shaped for the purpose of gathering in the air as the stone revolves. The “rynd” or driver that crosses the eye of the running stone passes through the cylinder which at its opposite sides is slotted for the purpose.

[Printed, 8d. Drawing.]



A.D. 1865, June 8.—No. 1568.

HASELTINE, GEORGE. — (*A communication from Howard Tilden.*)—This is an invention of a machine designed more particularly for sifting flour, but also applicable to the sifting of other fine or powdered material, such as spices, drugs, &c. It consists in mounting in a suitable box or casing, a semi-cylindrical stationary sieve, extending from end to end, and in connection therewith a suitable inclining trough or contrivance for conveying the flour into the sieve, and a space beneath to receive the flour as it passes through. Fitted lengthwise concentrically inside the sieve is a shaft that carries a number of elastic rubbers which, as the shaft revolves, press the flour against and rub it through the meshes of the material of which the sieve is made, the shaft being actuated by any suitable means applied to one end, which passes through the end of the case and projects therefrom. It will (the inventor remarks) “be obvious that the action of the rubbers will be  
“very effective, their operation being quite similar to the  
“action of the hand in rubbing flour through the meshes of a  
“common hand sieve, the rubbers working and pressing the  
“flour through the sieve and reducing to an unpalpable  
“powder any of the flour which exists in lumps or in a  
“‘caked’ state.”

[Printed, 6d. Drawing.]

A.D. 1865, July 5.—No. 1777.

GRAY, JOSEPH WACE.—This is an invention of apparatus designed for cleaning and hulling rice and other grain and seed, for which purpose the inventor says:—“I employ a  
“horizontal shaft with pulleys upon it for driving it faster or  
“slower, as may be required. On the shaft is mounted a  
“stone, by preference of a conical form, and of a length  
“about equal to twice its largest diameter; this cone, in  
“place of being stone may be made of a stone-like composition. Surrounding the stone is a cage of wire-work of  
“corresponding form, and geared with the shaft in such a  
“manner that it also can be driven at any desired speed.  
“The mesh of the wirework is of such a size that the grain



“ or seed under treatment is unable to escape through it, and  
 “ the space between the cone and the casing all round can be  
 “ adjusted by traversing the cone a short distance horizontally.  
 “ The grain or seed is fed into the casing at one end, a worm  
 “ on the shaft carrying it in at a regular speed; it by pre-  
 “ ference comes first on the larger diameter of the cone, and  
 “ as the cone and case revolve it gradually proceeds towards  
 “ the other end, being rubbed by the stone or stone-like  
 “ surface all the while. The smaller end of the casing is  
 “ closed by a stationary disc with a hole in it at one side for  
 “ the escape of the grain or seed from the casing when com-  
 “ pletely cleaned or decorticated; and this disc can be set so  
 “ that the discharge passage may be either at the bottom of  
 “ the casing or at the top, or at any desired elevation; and by  
 “ regulating the position of this passage the action of the  
 “ machine on the grain or seed may be adjusted to any  
 “ desired degree of severity.”

[Printed, 8d. Drawing.]

A.D. 1865, September 2.—No. 2264.

BARFORD, WILLIAM. and PERKINS, THOMAS.—This invention relates to the constructional details of such mills for grinding grain as operate by means of corrugated cylinder in conjunction with a stationary concave, according to the Specification of a Patent granted to C. F. Stansbury, August 25, 1855, No. 1927, and known as Felton's American mill, in which it is stated the mode of adjusting the concave, and its tendency to rise unequally, and become jammed up when the mill is overfed, and will not descend again by its own weight, is objectionable, no means being provided for forcing it down.

To obviate these inconveniences, according to the present invention, guides to maintain the level of the concave whilst rising and falling, and to prevent all lateral movement, are provided to operate under all conditions of working, whether the grinding surface of the concave be set equidistant from the grinding surface of the cylinder, or otherwise when it is found desirable to vary the distance at the two ends.

Also in the feeding trough a screen is fitted in such manner as to intercept and carry off into a separate shoot any stones,

pieces of metal, or other substance which may have become mixed with the grain accidentally, and would injure the mill if allowed to enter.

[Printed, &c. Drawing.]

A.D. 1865, September 20.—No. 2399.

TYE, JOHN.—This invention relates to the constructional arrangements and working of horizontal mills, which operate by means of a pair of stones, one of which the "bed stone" is usually stationary, but according to this invention both stones are mounted to revolve, and by this mode of working the inventor says:—"I am enabled to perform a greater amount of work with the mill, while the material being ground is more rapidly reduced and retained a less length of time between the grinding surfaces. I prefer to mount the lower stone on a tubular shaft, by which it is driven by any suitable gear, while the top stone is mounted on a spindle passing up the hollow of the tubular spindle and driven from the same first mover. To each stone I give a degree of speed that may be best suited for the material under operation; for instance, a slow speed may be given to the bed stone, while at the same time the top stone may revolve rapidly, or vice versa, or both may revolve rapidly or at a medium velocity."

The working position of the stones or grinding surfaces may be otherwise than horizontal, but in all cases both grinding surfaces must revolve.

[Printed, &c. Drawing.]

A.D. 1865, September 28.—No. 2485.

WREN, BENJAMIN.—This invention relating to the process of grinding wheat, consists in details and arrangements for working mills; also sending a current of air between the grinding surfaces of millstones; and to drying and improving the condition of damp grain.

1st. The air current may be made to reach the grinding surfaces, either through the eye of the top or running stone, or by means of pipes through the bed stone. A revolving roller fluted or otherwise placed in the receiving spout.

delivers the meal as it is ground into the creeper or other receptacle, and prevents dust and waste. The meal as it falls from the millstones is cooled by a current of air, which can be regulated, and through the top of the millstone case another current of air is forced, to carry off from the case the warm air, which is passed in a zig-zag direction through a receiver, where the dust settles on tilting floors.

2nd. Damp wheat and other grain is passed through a feed pipe into an apparatus or zig-zag case, and falls upon a series of platforms respectively made like a venetian blind, each platform being composed of shelves or laths and capable of being either more or less opened and closed. A blast of air from a fan or other blowing or exhausting apparatus is directed up the casing, and passes through the grain as the latter falls from lath to lath of each platform in succession through the whole series. By this means the grain is dried, and (it is stated) its condition is improved.

[Printed, 10d. Drawing.]

A.D. 1865, October 7.—No. 2583.

PRIESTLEY, JAMES, WHITWORTH, WILLIAM, and SUTCLIFFE, JOHN.—This invention relating to apparatus for grinding corn, seed, and other substances, refers to ordinary disc grinding stones, where the lower or stationary stone is mounted on a hurst plate, and the upper or running stone is mounted on a vertical spindle; it consists in constructing the hurst plate with a series of openings around the edge of the stone within the casing, so that the corn, seeds, or substances as they are delivered or thrown out from between the grinding surfaces into the mill casing, may at once pass out through the openings in the hurst plate into an annular receptacle placed beneath. The stones (it is stated) are kept cool and in good condition, and the quantity of meal turned out is greater than heretofore.

[Printed, 8d. Drawing.]

A.D. 1865, October 18.—No. 2692.

PARKER, WILLIAM HENRY.—(*Provisional protection only.*)—This invention relates to the process of constructing millstones which (it is stated), when made of French buhrs fitted

and bound together in a circular form by metal hoops, require to have the interspaces filled up with plaster or cement, and being then too light, require to be backed with cement and broken stones mixed and plastered over to make them smooth and of sufficient weight and substance. But (it is further stated) such stones being composed of such a conglomerate mass, although capable of being balanced when at rest, have their equilibrium destroyed or counteracted by the force of centrifugal action, and when in motion such a stone will "dip" or not run true. To remedy this, instead of the above mode of backing the running stone, the inventor employs a shallow annular box of metal, in which the "buhrs" previously cut to the required form and size are placed in position, and then the interspaces are filled up by running in either molten metal or cement, the whole surface being afterwards reduced to a true plane. The lower or stationary stone is constructed in the same way, with the addition of a part projecting all round by which it is fastened to its bed or floor.

The running stone is mounted on a ball and socket joint, so that it may self balance irrespective of the spindle which actuates it.

[Printed, 4d. No Drawings.]

A.D. 1865, November 1.—No. 2817.

NEWTON, ALFRED VINCENT.—(*A communication from Eleazer A. Paine.*)—This is an invention of apparatus contrived for dressing millstones, and designed to supersede (what are termed) complicated machines hitherto devised for the purpose, the work to be done more rapidly and in a more perfect manner than it is possible to do it by hand. It (as stated) "consists in arranging a carriage or an adjustable frame with a rack-gearing and pick-driving mechanism in such a manner that by the turning of a single shaft the pick will be operated and fed along to its work, an arbitrary or positive movement being given to the pick, so that the same will cut an uniform depth, but be capable of being graduated or set to cut to a greater or less depth, as may be required."

[Printed, 10d. Drawings.]



A.D. 1865, November 3.—No. 2839.

SMITH, RICHARD, junior. — This invention relating to a special mode of mounting and driving millstones, consists in rigidly fixing the upper or running stone to the top of the mill spindle, the turning of which imparts the necessary rotary movement to the stone, and mounting the lower stone on gimbals and thereby render it capable of self-adjustment horizontally to the face of the running stone. Or, instead of making the upper the running stone, it is preferred to establish the lower as the running stone, and to mount the upper stone on strong gimbals, in a manner similar to the ordinary mode of mounting a ship's compass. Set screws, which do not press with their points upon the running stone, are employed to prevent rattling or jolting at the time of starting or stopping of the running stone, which is connected to the case by means of a leather apron and two india-rubber bands, one being passed round the stone and the other round the case. When the lower or running stone is driven by toothed gearing on the spindle beneath, a bearing should be placed above the wheels to prevent vibration.

[Printed, *ed.* Drawing.]

A.D. 1865, November 13.—No. 2924.

NEWTON, HENRY EDWARD.—(*A communication from Alexandre Désiré Lagoguey.*)—This invention relates to a mode of ventilating millstones, with a view to avoid the injurious effects of the heat, generated by the friction during the process of grinding, upon the meal and flour, and the working disadvantages arising therefrom, all of which are particularly described.

The air by means of a blast apparatus is forced down into the eye of the running stone between two movable metallic cones, that inclose the pipe which supplies the grain to the centre of the eye. The height of these cones is adjustable by a screw, their upper ends being held in position by a support fixed on the mill case. From the space between the cones, the air current finds its way down four bent tubes, which open outwards at their lower ends opposite four wedged formed cavities, leading out of the eye of the running stone and terminating gradually in a curved direction between

the grinding surfaces. A hollow glass sphere is interposed in the air passage above the stone, in order that the miller may see that a proper quantity of grain is falling into the mill through the central supply pipe, which is also of glass. The air supplied in this way does not (it is stated) find any escape excepting between the stones, and consequently the temperature is kept down. The quantity of air which passes to the grinding surfaces is regulated by a valve, the position of which is exhibited externally by an indicator.

[Printed, 8d. Drawing.]

A.D. 1865, December 5.—No. 3119.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Stanislas Sorel and Emile Justin Menier.*)—This invention relates to the manufacture of a cement formed of oxychloride of magnesium, capable of being moulded into shapes which harden in a few days, and applicable to a variety of purposes, amongst which are mentioned mill or grindstones.

It may (as stated by the inventor) be made in two ways:—

1st. “ By diluting or tempering magnesia, which may be  
“ more or less hydrated and carbonated, with a solution of  
“ chloride of magnesium more or less concentrated. I em-  
“ ploy a solution marking from 25 to 35° Beaumé. The  
“ chloride and the magnesia may be mixed in different  
“ manners.”

2nd. “ Instead of mixing the magnesia with a solution of  
“ chloride of magnesium, I first put with the magnesia  
“ chloride in a dry state, and employ water to form the  
“ cement. I dry the chloride by heat until it ceases to give  
“ off steam. To dry large quantities of chloride the operation  
“ may be commenced in caldrons and finished in reverberatory  
“ furnaces; and when the chloride is dry I grind it by a  
“ millstone or otherwise, and mix it with the magnesia. If I  
“ employ with the magnesia a powder upon which the chloride  
“ of magnesium cannot exert chemical action, I first triturate  
“ the dried chloride with this powder before adding the  
“ magnesia. If it is required to give more density to the  
“ magnesia I moisten it with water or a weak solution of  
“ chloride of magnesium; I triturate it, dry it, and mix it  
“ with the dried chloride of magnesium as before described.  
“ I employ about 12 parts by weight of dried chloride of

“magnesium for 100 parts by weight of magnesia pure or  
“mixed, say the chemical equivalent of dry chloride of  
“magnesium, and the chemical equivalent of calcined  
“magnesia.”

“This cement should be stored in casks or other well closed  
“vessels to keep it from contact with the air. Magnesia and  
“chloride of magnesium are the two chief ingredients of the  
“cement, but these materials may be mixed with other  
“powdered substances.”

[Printed, 4d. No Drawings.]

A.D. 1865, December 5.—No. 3126.

COWPER, EDWARD ALFRED.—(*Provisional protection only.*)—  
The object of this invention relating to the means of feeding  
air to the grinding surfaces of millstones, by exhausting the  
millstone casing, is to accomplish it without losing any appreciable  
quantity of the finer particles of meal or flour, usually  
carried off by the current of air which ascends the spout,  
through which the meal is delivered from the mill case; and  
to this end three modified arrangements of apparatus are  
devised for keeping the passage closed, at the same time that  
the delivery of the meal takes place. The inventor says, “my  
“invention may be put in practice in a variety of ways;  
“thus, in one arrangement, I place at the bottom of the  
“meal spout a small wheel having blades on its circumference  
“ (very like a small water wheel) partially enclosed in a case  
“ nearly fitting the same, communicating at the top with the  
“ spout, and having an opening at the bottom for the exit of  
“ the meal. This wheel is caused to revolve so as to allow  
“ the meal to pass freely by falling into the buckets at top  
“ and falling out of them at bottom. Instead of employing  
“ only one such wheel, two wheels may be employed working  
“ close to each other.”

[Printed, 4d. No Drawings.]

A.D. 1865, December 30.—No. 3385.

COCHRANE, WILLIAM FRAZER.—This invention relates to a  
mode of feeding meal to the bolting reels in flour mills by  
*atmospheric* pressure, in such a way as to prevent choking or  
*clogging*, and also insure regularity of action and uniformity

in the amount of meal delivered by the apparatus at each successive stroke. The meal being gathered towards a spout (that increases in size downwards) by a "hopper boy" or rake on the cooling floor of the mill, is drawn down the spout by the suction of a rectangular piston that works air tight to and fro in a cylinder or passage of similar transverse form, and at each return stroke it forces a regulated quantity of meal into an escape passage which turns downward and directs the meal into the end of the bolting cylinder.

The main features of the invention as stated by the inventor consist, "1st, in feeding meal to the bolting apparatus by  
" means of a pump; 2nd, providing the piston or plunger of  
" the pump with off sets or steps to prevent packing of the  
" meal in the pump barrel; 3rd, retaining the piston rod in  
" a fixed longitudinal position relatively with the piston by a  
" particular means, and adjusting the piston forward or back  
" by simply turning the screw rod in the piston; 4th, the  
" employment of a wheel or equivalent with the piston rod so  
" arranged that it will turn the rod, but will allow the latter  
" a free longitudinal movement; 5th, the arrangement of the  
" stationary packing employed with the piston; 6th, the em-  
" ployment of a feeding spout made enlarged at its bottom in  
" combination with the pump; 7th, a regulating device for  
" contracting or enlarging the area of the escape passage of  
" the barrel, governed by the weight or pressure of the column  
" of meal to counterbalance that in the feeding spout."

[Printed, sd. Drawing.]

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A.D. 1866, January 5.—No. 37.

JACKSON, JOHN, and JACKSON, SAMUEL. — (*Provisional protection only.*)—The object of this invention relating to the constructional details of mills adapted to the process of grinding corn and other grain, is to facilitate the escape of the ground meal from the millstones, and subsequently from the mill casing, and the manner in which these results are to be accomplished, is described by the inventors as follows :—



“ We attach to the upper or revolving grindstone one or more scrapers or wings which project beyond and below its circumference. These scrapers or wings in revolving form a clear annular space into which the flour can escape from between the grindstones, and they carry the flour to the discharging spout or spouts, by which it is delivered to the creeper or worm in the ordinary manner. By this means the stones will work longer without dressing, the production is increased, and the flour is prevented from heating, and therefore in a fit condition to be taken direct from the grindstones to the dressing machine.”

[Printed, 4d. No Drawings.]

A.D. 1866, March 7.—No. 695.

ROBERTS, EDWIN, and ROBERTS, HENRY. — (*Provisional protection only*).—This is an invention relating to that class of mills which reduce or grind wheat or grain by means of chilled cast iron discs or plates with surfaces suitably roughened or prepared, and disposed in vertical position, one, the runner being fixed on a horizontal tubular shaft supported by the framework, to which the other or stationary plate is bolted. The proximate distance of the grinding surfaces is regulated by a screw which, when turned by a hand wheel, takes effect on one end of the shaft, the other end whereof carries the pulley or rigger by which the shaft and running plate are actuated. This pulley has a trumpet-shaped central mouth piece, furnished with vanes or blades that collect and send a current of air through the shaft up to the running plate, where the air escapes through lateral openings in the shaft and enters between the grinding surfaces with the grain, which is fed in and carried through the eye of the stationary plate by a helical vane or blade, fixed on the shaft and revolving therewith, a movable feeder being disposed in the passage leading from the supply hopper.

[Printed, 4d. No Drawings.]

A.D. 1866, March 29.—No. 909.

MYERS, MORRIS. — (*Provisional protection only*).—This invention relating to the construction of apparatus for sifting

sugar and flour or meal, or for separating the smaller from the grosser particles in saucers and condiments, consists, (as stated by the inventor) “ of an upright spindle made to revolve in a supporting socket, and fitted with arms to press against the sides of the vessel in which the operation of sifting or separating is to be carried on, in order to strengthen and support the apparatus. On the bottom of the spindle are three or more arms, each of which carries a metal scraper which presses against the sieve or sifter below, and urges the material to be sifted through the meshes of the sieve. Pressing against each scraper is a small spring, which allows of the scraper passing over any lump or accumulation of material, should the sieve become choked. The sieve may be of wire cloth or hair cloth, canvass, or other suitable or usual material. In some cases instead of the metal scrapers I use brushes inserted in the arms, which answer the same purpose as the metal scrapers where the material composing the sieve is soft or more easily worn, as hair cloth or canvas.”

[Printed, 4d. No Drawings.]

A.D. 1866, March 29.—No. 917.

NEWTON, HENRY EDWARD.—(*A communication from Edmond Théodore Ganneron.*)—This invention relates to the construction of apparatus for decorticating rice and other grain, which process (it is stated) is generally carried on in the colonies, and much rice is broken and wasted by reason of the rough action of the beaters or stampers employed. Rubbing mill-stones which somewhat reduce the amount of waste are sometimes employed to operate upon paddy or rough rice, but they do not entirely remove the objection.

The present invention is stated to be strong and simple, will operate on a large quantity of grain at one time, and produce so much less waste or broken grain, that the use of the sifting apparatus usually employed to separate the broken pieces from the perfect grain may be dispensed with, and the rice may be pearled or polished as it comes from the sieve.

The apparatus as shown is described as being “ composed, first, of a hopper or vessel above for holding the paddy or rough rice; second, of one or more parts of like construction placed one

“ above the other, consisting each of a cast-iron framework  
 “ supporting two cylinders which are driven at different  
 “ speeds, and between which passes the grain which issues  
 “ from the hopper or vessel above; third, of a fan blower or  
 “ aspirating device for removing the husks or skins of the  
 “ grain the moment they are detached therefrom, and before  
 “ they can enter between the pair of cylinders immediately  
 “ below the first; fourth, of a bolting, sifting, or separating  
 “ cylinder enclosed within a case for the purpose of dividing  
 “ or separating the product into different lots according to the  
 “ quality or size of the grains which have been decorticated,  
 “ and consequently admitting of separating the grains which  
 “ have been broken in their passage through the apparatus.”

Any convenient number of these sets of cylinders may be arranged one above the other, and if desired an additional pair covered with caoutchouc or some other flexible or elastic substance may be added for the purpose of removing from the rice any pieces of skin that may still adhere thereto, and to give to the rice a polished and brilliant appearance, which will increase its commercial value.

[Printed, 1s. Drawing.]

A.D. 1866, April 13.—No. 1048.

CLARK, WILLIAM. — (*A communication from Jean Baptiste Bernard Charles Laurent, Emile Peugeot, and Jules Peugeot.*)—This invention, relating to mills, for crushing, grinding, and similar purposes, refers to that class of mills which operate by means of toothed metallic cones and concaves or cylinders, and one of its chief features relates to the mode of forming the concaves or cylinders from bent plates, upon which the grinding teeth have been previously formed, and of which, in addition to the usual two sets of teeth, are intermediate sets of medium size, and instead of the ends of the plates when bent to form the concaves or cylinders being united by soldering or brazing, they are left free, and are so placed in the framework as to have liberty to move self-adjustingly. The cones are truncated and variously formed and toothed spirally in sets. The inventor claims, so far as regards the system of toothed cones, 1st, their general form, especially the convexity of the upper part; 2ndly, the circular concavities; 3rdly,

“ the frustrum shaped base, within the limits of inclination  
 “ before given; 4thly, the helical teeth within the limits for  
 “ the length of the thread before indicated; 5thly, the forming  
 “ of intermediate teeth; 6thly, the connection within the  
 “ same limits between the upper and lower diameters of the  
 “ cone; 7thly, the capability of removing the lower portion  
 “ of the cone so as to enable it to be replaced when worn  
 “ out.”

In order to relieve the part of the cone occupied by the fine teeth, cones of greater length may be employed, so as to be able to multiply the intermediate teeth and cavities, and impart more progress to the grinding action, or to avoid expense, the same result may be attained by fixing two cones and two concaves end to end, each pair having cutting surfaces as before. A contrivance, which operates by means of pallets or agitators is introduced for increasing the feed, and consequently the produce of the mill, the framing of which is fixed together by means of conical pins.

[Printed, 1s. 10d. Drawings.]

A.D. 1866, April 16.—No. 1073.

JOHNSON, JOHN HENRY. — (*A communication from Joseph Wells.*)—This invention, relating to the construction of apparatus for sifting flour and for other purposes, is described by the patentee as consisting in the employment “ of one or more  
 “ curved wings or blades hinged to one or more horizontal  
 “ revolving radial arms which are rotated upon or over a  
 “ finely perforated or wire gauze surface forming the bottom  
 “ of the receptacle in which the substance or substances to be  
 “ sifted is or are placed. The wings are curved in transverse  
 “ section, and are kept in uniform contact with the wire gauze  
 “ or perforated sifting surface by means of springs carried by  
 “ the radial arms and bearing against the wings or blades.  
 “ In order to prevent the wings or blades from passing too far  
 “ under the radial arms, stops are placed or formed upon the  
 “ under side of the radial arms next to the hub or central boss  
 “ thereof, against which stops the wings or blades rest. By  
 “ hinging the wings or blades to the arms, and by the use of  
 “ the springs above-mentioned, the wings or blades are  
 “ enabled to rise or yield slightly, and pass over any hard  
 “ substance that would otherwise injure the wire gauze or



“ other sifting surface. A rotary motion is imparted to the  
 “ wings or blades by means of a vertical spindle, the lower  
 “ square end of which fits into a square socket on the central  
 “ boss of the horizontal radial arms. A cross piece provided  
 “ with a collar bearing or socket serves to maintain or support  
 “ the vertical spindle in its proper central position; this  
 “ cross piece is fixed in its place by being sprung into the in-  
 “ terior of the receptacle, and is provided with pins or studs at  
 “ its opposite extremities which enter corresponding holes in  
 “ the sides of the receptacle. A winch handle is fitted on to the  
 “ upper end of the spindle for the purpose of rotating the  
 “ same, and thereby keeping the substances well stirred or  
 “ rubbed over the sifting surface.”

[Printed, *sd.* Drawings.]

A.D. 1866, April 30.—No. 1213.

**RICHES, RICHARD ROBERT, and WATTS, CHARLES JAMES.**—  
 This invention relates to the construction of a feeding appa-  
 ratus, applicable to mills and machines employed in grinding,  
 kibbling, or crushing grain and other substances. It is  
 intended to supply the grain to such mills and machines more  
 regularly and uniformly, by means of a screen combined  
 therewith, and to separate foreign matters from the grain  
 before it enters the mill.

The feeding apparatus consists of an adjustable vibrating  
 slip, channelled on its upper surface, and sliding in grooved  
 pieces fixed under an aperture in the bottom of the feeding  
 hopper, and over a vibrating screen which, as also the slip  
 receives by suitable connections, motion from an eccentric on  
 the mill shaft. The adjustment of the slip is regulated by a  
 hand screw. The screen is perforated and supported, inclining  
 at a suitable angle, and at the lower end is furnished with a  
 trough, which receives the pieces of stone and other sub-  
 stances intercepted by the screen, which may be disconnected,  
 and in some cases its use (if not required) may temporarily be  
 dispensed with, the invention consisting in their conjoint use  
 in accordance with the arrangement described.

[Printed, *sd.* Drawing.]

A.D. 1866, May 2.—No. 1238.

**MORRIS, JAMES.**—This invention relates to the construction  
 of mills for grinding wheat and other grain, the millstones

being mounted in vertical position on a horizontal shaft, the ends whereof are supported in bearings upon the mill frame, one end of the shaft carrying a strap pulley whereby the mill is actuated, and the other a yielding arrangement of details for setting up or approximating the grinding surfaces. The running stone is supported on the shaft by what is termed a "universal swivel joint," which affords the stone liberty to vibrate, and the bed stone is cemented in a shallow cast-iron pan, the shaft passing centrally through the eye of both stones. The grain, which is delivered from a hopper in quantity regulated by a mechanical feeder, is directed by a down spout into the eye of the bed stone, and is moved forward to the grinding surfaces by a helical blade that is fixed on the mill shaft and revolves therewith. When the grinding surfaces of the two stones are brought together their accurate self-adjustment is at once effected by the universal swivel joint, provided they have been properly dressed, and (it is stated) no further adjustment is required, as they will maintain their correct positions relatively "until they are completely worn out." The stones are inclosed by a casing, whence the meal may be delivered by a spout placed in any convenient direction.

The inventor commences his final specification by introducing the following preliminary remarks:

"I desire first to explain that owing to a clerical error the position of the millstones was described in my Provisional Specification as being horizontal. It will be apparent, however, upon the general description of my invention, that the word vertical should have been used instead of horizontal, the vertical position of the stones being of the essence of my invention. With these exceptions my Provisional Specification will sufficiently explain the object of my invention, and the general nature of the invention sought to be secured."

[Printed, 10d. Drawing.]

A.D. 1866, May 4.—No. 1279.

BOUSFIELD, GEORGE TOMLINSON.—(*A communication from Thomas Marsh.*)—(*Provisional protection only.*)—This invention relates to the construction of a step for vertical spindles, adapted specially to spinning frames, and applicable amongst other uses to the vertical spindles of grinding mills. This

step it is stated to be self-lubricating so long as any oil or other liquid lubricant remains in an annular chamber which is formed by a recess in the spindle box, the spindle end resting upon an adjustable plug which is screwed into the box. The oil or lubricant deposited in the annular chamber is fed to the lower end of the spindle through a small opening, and when the spindle is revolving, the lubricant has a tendency to rise until it reaches a groove in which it collects and passes back into the chamber through another aperture near the top, and by this means (it is stated) the oil or lubricant "is kept constantly circulating in sufficient quantity around the bearing without flooding it, and will continue to lubricate the spindle so long as any remains in the chamber."

[Printed, &c. Drawing.]

A.D. 1866, July 11.—No. 1586.

DUFRENÉ, HECTOR AUGUSTE.—(*A communication from Joseph Perre.*)—This invention relates to the construction of apparatus for decorticating rice, corn, and other grain, and which operates by means of the friction of two elastic bodies, or of one body that is elastic opposed to another that is hard and rough and between which the grain is passed, india-rubber to form the elastic body being preferred. The invention is described with reference to three modifications, consisting in:—

1st. An apparatus wherein two horizontal millstones are employed, one, the running stone which is mounted on a vertical spindle, having a plane or slightly hollow and hard surface of sandstone, siliceous, emery, or other artificial or natural stone, and the surface of the other millstone is covered with india-rubber or other similar elastic material of suitable thickness, and attached to the surface of the stone by a certain description of glue not liable to be effected by heat, there being an intermediate layer of gauze or cloth between the india-rubber and the stone.

2nd. An apparatus consisting of two millstones, both of which have india-rubber facings.

3rd. An apparatus consisting "of a millstone enveloped with india-rubber with a horizontal axis, which millstone turns "at a short distance from a rough and rigid or an elastic body,



“ adapted wholly or in part to the form of the turning mill-stone.”

The general construction of the mill is similar to other mills, excepting that special arrangements are added for distributing the grain from a conical hopper. The mode of driving by steam or other motive power is effected by the aid of strap pulleys, and a method of adapting horse power is described.

[Printed, 8d. Drawing.]

A.D. 1866, June 28.—No. 1724.

JOHNSON, JOHN HENRY.—(*A communication from Eugène Pierre Barrabé.*)—The object of this invention is to improve the decorticating power of a machine described in the specification of a former Patent granted to this patentee, and bearing date December 24th, 1861, No. 3214, and thereby render the said machine applicable to all descriptions of pulse, grain, and seed; to this end “ it is proposed to roughen the upper surface  
“ of the rotating conical or dished plates and the under surface of the intermediate or stationary conical or dished  
“ plates, so that the pulse or grain operated upon may be  
“ more effectually cleaned and decorticated by being thrown  
“ by the centrifugal force produced by the revolution of the  
“ conical or dished plates against the asperities or roughened  
“ projections thereon, and also at the same time against the  
“ similar roughened under surfaces of the fixed plates. The  
“ pulse or grain on being thrown over the outer edges of the  
“ revolving cones strike against the inner roughened surface  
“ of the cylindrical casing, and thence falls on to the upper  
“ surface of the next lower fixed plate between which and the  
“ under surface of the revolving plate above, both of which  
“ surfaces are smooth, it descends freely towards the central  
“ shaft and falls upon the roughened surface of the second one  
“ of the series of rotating conical or dished plates, and so on  
“ throughout any number of alternate moveable or revolving  
“ and fixed roughened plates, the roughened and smooth surfaces of which are always in juxtaposition as above described  
“ By using separate machines in which the plates are at  
“ different angles different effects may be produced on the  
“ same substances.” . . . It is further proposed to gradually



“ diminish the width of the annular space between the circumference of the rotating plates and the cylindrical casing from the top plate to the bottom one of the series, whereby the proportionate action of the several cones upon the whole of the pulse or grain is graduated in a regular manner and is rendered successive and progressive from top to bottom of the series.”

The means are also contrived for varying the speed of rotation of the plates without altering the speed of the driving shaft.

[Printed, 1s. Drawings.]

A.D. 1866, July 13.—No. 1841.

THOMPSON, WALKDEN, and STATHER, THOMAS.—This invention relating to the construction of mills for grinding corn and other hard substances, consists (as stated by the inventors) in placing within an outer circular casing or drum, “a ring formed on its outer periphery with teeth, into which the teeth of a pinion fitted between the ring and the outer casing gear; the part of the casing where this pinion is fitted is enlarged to receive it; the ring is formed at one or both sides or edges with a projecting rib or fillet which takes into a corresponding circular groove in the casing, so that the ring is steadied in its revolution while the ribs at the same time prevent the reduced substance escaping from within the ring except through the pipe hereafter mentioned; within the ring, upon a central shaft to which rotary motion is communicated, I fit four or other convenient number of arms, the outer ends of which are by preference faced with steel and reach to within a short distance of the inner periphery of the ring. The material to be operated upon is fed through an opening in the side of the outer casing near the central shaft, and the revolving arms grind or crush it against the inside of the ring, to which a slower rotary motion is simultaneously imparted by means of the pinion before mentioned. For operating upon substances of large size we employ ribbed rollers or crackers, or other breaking apparatus in proximity to the mill hereinbefore described, so that the substances may be broken up before entering the mill; these rollers or apparatus may also serve to feed the substance regularly to the mill. The

“blast created by the revolving arms in the mill drives the substance after having been reduced to powder into a pipe at the upper part, from which it passes to an inclined cylindrical or other shaped riddle; through the sides of which that portion which has been sufficiently reduced is bolted or sifted, while that which has not been sufficiently reduced issues at the lower end of the riddle, and may be returned to the mill. We do not in all cases fit the ring so as to revolve; for operating on some substances, we prefer it to be fixed or stationary.”

[Printed, 10d. Drawing.]

A.D. 1866, July 24.—No. 1922.

NEWTON, WILLIAM EDWARD.—(*A communication from Stephen Oscar Ryder.*)—This invention relates to the construction of machinery designed especially for the process of hulling and finishing rice, but applicable also to hulling and polishing other grain.

It consists in:—

1st. The use of a roller of stone or other hard and suitable material, mounted on a horizontal revolving shaft, and an adjustable stationary shell or a concave abrader, which is lined with india-rubber or other elastic substance, and between which and the roller as it falls thereon from a hopper above, the rice is carried, and by the attrition which takes place, the hulls or husks are rubbed off, and subsequently separated from the kernels by a fan or other blowing apparatus.

2nd. The use for finishing or polishing rice or other grain after the hull is removed of a cylindrical casing lined with a suitable rubbing material or composition of a mineral character, and revolving in the contrary direction to a shaft which passes through it, and carries a series of beaters composed of alum, dressed hide, india-rubber, or other yielding or flexible substance, which acts upon the rice as it passes through the apparatus; the dust and detached particles pass off through screen openings in the cylinder, and the finished rice as it falls from the delivery end of the cylinder is gathered into suitable receptacles. A portion of the delivery end of the cylinder may be lined with a yielding flexible substance like the beaters instead of being lined throughout with the composition.

3rd. Relates to the preparation of the composition employed for lining the cylinder. This is "composed of corundum, plaster of Paris either with or without sand, and a menstruum of alcohol, shellac, and rosin."

[Printed, 8d. Drawing.]

A.D. 1866, August 21.—No. 2142.

GEDGE, WILLIAM EDWARD.—(*A communication from François Cailleaux.*)—(*Provisional protection only.*)—This invention relates to a combined portable grinding mill and bolting apparatus; also to certain arrangements about the eye of the running stone, which are applicable to mills generally of the same construction. The mill casing is made in two removable parts, in order that access may be easily gained to the eye of the running stone; barley and oats pass through a scuttle from the mill direct into sacks, but meal and flour are conveyed into a bolting room, which forms part of the apparatus, and from which the flour is withdrawn through small doors by suitable scrapers, the bran being gathered into a scuttle at the "tail of the bolting room." The mill is actuated by an endless band or strap passing over pulleys fixed, one on the mill spindle, and the other on the driving shaft of a portable engine which always accompanies the mill.

The arrangements about the eye of the running stone, relate to the manner in which the grain is made to enter, and its lodgment prevented in the eye of the stone by leather cylinders, through which it passes on to the bed stone without striking the interior of the eye of the runner.

[Printed, 4d. No Drawings.]

A.D. 1866, August 22.—No. 2148.

WEILD, WILLIAM.—(*Provisional protection only.*)—This invention relates to the treatment of carrageen or Irish moss, seaweed, or other lichen, preparatory to grinding or reducing them to powder. As stated by the inventor, the first part of the process consists in washing the material and separating foreign matter therefrom; "second, drying in the atmosphere of ordinary temperature; third, breaking up by a willow or machine similar to that used for breaking up cop bottoms; fourth, desiccating by artificial heat or other means; fifth, crushing or pulverising; sixth, sieving

“ to separate foreign matters and unbroken pieces ; seventh, grinding in any suitable mill. The first, second, and third operations may be dispensed with, as they are only intended to obtain a more clean and perfect result than may be necessary for some purposes ; and the sixth process may be omitted, but it is better for safety and when a pure quality of metal is required ; and the fifth and seventh operations may be performed in one, though a better result is more conveniently obtained by keeping them distinct.”

The washing operation may be performed in a machine similar to the machines used for washing wool, the loose water may be thrown out centrifugally by a hydro-extractor, the moss may be subsequently dried by artificial heat in any suitable desiccating apparatus, then broken up by passing it between fluted rollers, and finally ground in a mill, comprising a central fixed steel cone within a rotating conical shell of the same metal, each being furnished with grinding teeth.

[Printed, 4d. No Drawings.]

A.D. 1866, August 30.—No. 2242.

NEWTON, WILLIAM EDWARD.—(*A communication from William Van Vleet Lidgerwood.*)—The object of this invention relating to the process of hulling and cleaning coffee and other berries or seeds, is so to construct the machinery employed, that any stones and similar substances mixed amongst the berries and seeds, may be separated or crushed before the berries reach that part or section of the apparatus that is liable to injury. The present invention is supplementary to an original machine, the subject of a former patent granted to R. P. Walker, May 15, 1857, No. 1374 ; and it consists in placing a shaking screen in the feeding hopper to detain any substance larger than the berries, that pass through into the hulling machine, which is similar to the original, and consists of an octagonal roller or drum revolving within a cylindrical casing, that rotates in the opposite direction, the axis of the roller being mounted on suitable framework inclosed to confine the dust. The coffee is hulled whilst passing through the machine between metallic plates, furnished with rasping teeth and secured to the flat sides of the roller or drum and also to



the casing, which is formed of wirework attached to a skeleton frame, the progressive movement of the coffee and hulls through the machine being assisted by adjustable sheet metal "flights." One of the main features of the present invention consists in fixing on that end of the drum and of the casing at which the coffee enters, strong plates of chilled iron roughened or furnished with teeth, and capable of crushing such stones as pass the screen and obtain an entrance into the machine. After leaving the machine, the coffee and hulls are separated by a fanning mill furnished with two blowing fans, and afterwards the coffee is passed over joggling screens.

[Printed, 1s. 4d. Drawings.]

A.D. 1866, September 29.—No. 2519.

MARTIN, PIERRE PAUL JOSEPH.—The object of this invention is the removal of the outer covering and filamentous matter from cotton seeds as they are left by the cotton gin, and to clean the kernel previous to the extraction therefrom of oil.

The hulling is effected by passing the seed between the prepared surface of a revolving cylinder or roller, and the hollow surface of a stationary concave, also prepared for the process in the same manner, by fixing separately in a close series of dovetail grooves cut crosswise in both roller and concave, a corresponding number of cutters or knives, one in each groove, to form the grinding surfaces respectively of the roller and of the concave, which latter is fitted in a suitable frame, and capable of being acted upon by screws, that advance or withdraw it more or less to the prepared surface of the roller. The cutters, which are adapted to slide into the dovetail grooves, are flat at top, the two angles constituting the cutting edges, and when one edge becomes worn and dull, the cutters may be withdrawn and turned before re-insertion, so as to present their other edges to the work.

[Printed, 8d. Drawing.]

A.D. 1866, October 12.—No. 2643.

PATTERSON, JOHN.—(*Provisional protection only.*)—This invention relates to the process of grinding, crushing, splitting, and hulling or shelling grain and other substances, by

a mill of peculiar construction which operates by means of a drum or roller revolving within a strong broad ring or hoop, the interior whereof constitutes its grinding surface, which is brought into frictional contact with the exterior or grinding surface of the roller, the axis of which is actuated by a belt passing over a pulley fixed thereon. In some cases when the mill is employed for grinding only, both the outer ring and the roller are driven independently, and their axes incline to a position not relatively parallel, so that when the grain is passing between their contiguous grinding surfaces in addition to the direct crushing action there is a kind of wrenching movement combined; but for crushing purposes only, the roller drives the ring, and their axes are parallel. The grain is fed from the spout of a hopper into the space directly above the point of contact of the grinding surfaces, and as the ground or crushed material falls into the ring beneath, it is removed by a suitable scraper or brush.

[Printed, 4d. No Drawings.]

A.D. 1866, October 30.—No. 2798.

JOHNSON, JOHN HENRY.—(*A communication from Wilhelm Ramann.*)—This invention relating to a process of treating grain, pulse, seed, and flour or meal, with a view to prevent or arrest decay, consists in forcing, in either a cool or heated state, air through numerous perforated pipes disposed on the floors of granaries, the holds of ships and other places wherein the grain or substances are deposited. The air may or may not be charged with a gas of peculiar preventive or antiseptic quality not (it is stated) in any way injurious to health, being of the nature of sulphuric acid gas mixed with volatile resin oil and made as follows; “I take flowers of sulphur, refined  
“ rosin, and chips or sawdust of any wood containing a large  
“ proportion of iron, such, for example, as mahogany and  
“ ebony, and I burn these ingredients, which may be used in  
“ any suitable proportions, in a convenient stove or fire-place,  
“ the resulting gas being thence conveyed by a pipe or tube to  
“ the casing of the fan or blower. The object of the wood containing iron is to absorb any impurities there may be in the  
“ gas.” “Flour or meal may be treated at the time of grinding by directing a current or currents of a mixture of air

“ and the gas above referred to between or near to the grinding  
 “ surfaces, an exhauster drawing off such air and gas after  
 “ its operation upon the flour or meal. In treating flour or meal  
 “ when stored the gas and air may be introduced into it in a  
 “ similar manner to that described in reference to the treat-  
 “ ment of grain, seeds, and pulse, namely, by forcing it  
 “ therein, or the flour or meal may be allowed to descend  
 “ from a sieve or screen through a chamber which is kept  
 “ supplied with the required gas by being in direct communi-  
 “ cation with the gas-producing stove, in which latter case  
 “ the blower may be dispensed with, as the flour or meal  
 “ simply falls in a divided state through an atmosphere of the  
 “ gas.”

[Printed, 1s. 10d. Drawings.]

A.D. 1866, November 10.—No. 2928.

BONNEVILLE, HENRI ADRIEN.—(*A communication from Albert Angell, Henry Truman Bostwick Hayes, and Andrew McKenney.*)—This invention relating to the process and apparatus employed for pulping, hulling, cleaning, and polishing coffee and other berries and seeds enveloped by pulps, hulls, or cuticles requiring removal consists in:—

1st. Combining “ with a serrated or roughened or corrugated  
 “ wheel or cylinder of a series of serrated spring cams or  
 “ strippers arranged within a hollow or troughlike segment  
 “ partly encircling said wheel or cylinder, the wheel or cylinder  
 “ being made to revolve, while the segment with its  
 “ strippers remains stationary; the coffee or other berries or  
 “ articles to be operated upon being fed to the cylinder in  
 “ such a way that they descend over it between its roughened  
 “ periphery and the roughened spring strippers, the pulp and  
 “ hulls being broken and detached from the berries by the  
 “ action of the cylinder and strippers as the berries pass  
 “ through the segment ” or concave.

2nd. The construction of the spring strippers, which “ are  
 “ made either curvilinear or of any other form that will  
 “ impart pliability; or each stripper may be composed of two,  
 “ three, or more laminated springs with roughened ends.”

3rd. “ The combination of a serrated, corrugated, or  
 “ roughened wheel or cylinder with a series of spring brushes

“ arranged within a hollow or trough-like segment partly  
“ encircling said wheel or cylinder, whereby the more delicate  
“ skin or parts which adhere to the berry of coffee or other  
“ articles are removed, and the berry freed from delicate  
“ extraneous coatings, and polished so as to be ready for  
“ use.”

4th. “ Combining a hulling machine with a polishing machine, and also in arranging therewith an elevator for  
“ carrying the coffee or other articles upwards after they have  
“ been acted upon by the cams or strippers, and delivering  
“ them to the action of the polishing brushes.”

[Printed, 8d. Drawing.]

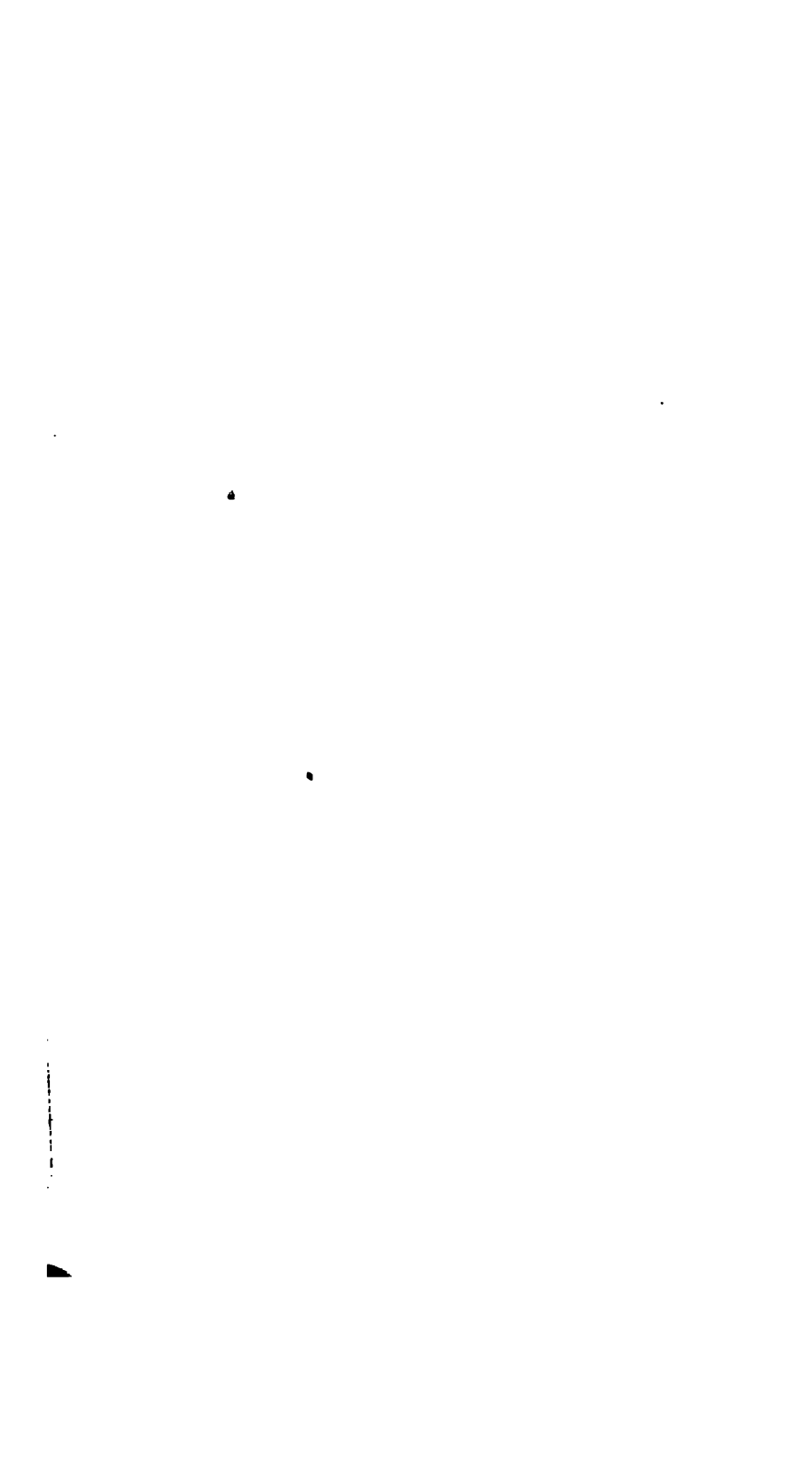
A.D. 1866, December 22.—No. 3384.

GEDGE, WILLIAM EDWARD.—(*A communication from Pierre Baillargeon.*)—The object of this invention relating to the process of grinding grain, is to induce an inflow and circulation of a current of air sufficient to keep the mill cool, by means of helical blades or fans fixed on the running stone in such positions, as will when the stone is rotating, cause the sucking or drawing into the eye of the stone a constant air current, which (it is stated) is enough in itself to keep the grinding surfaces and the grist cool. By this means evaporation during the grinding process is lessened, and the flour being kept at a low temperature, yields better (it is stated) when made into bread, than flour of ordinary manufacture. There is fixed at one side of the casing, what is called an exhaust conduit, through which air mixed with the evaporated moisture, is continuously drawn from the casing, and received in a funnel-shaped vessel communicating with the interior of the casing at top, so that the mixed air and vapour appear to be kept in constant circulation.

[Printed, 1s. Drawings.]

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## IV.

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 St. Just (*Institution*).  
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 Salisbury (*Literary and Scientific Institution*).  
 Saltaire (*Literary Institute*).  
 Scarborough (*Mechanics' and Literary Institute, Vernon Place*).  
 Selby (*Mechanics' Institute*).  
 Sevenoaks (*Literary and Scientific Institution*).  
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 ——— (*Mechanics' Institution*).  
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 ——— (*Workmen's Hall*).  
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 South Shields (*Public Free Library*).  
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 ——— (*Mechanics' Institute*).  
 Stafford (*Mechanics' Institution*).  
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 ——— (*Church of England Association*).  
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 Stowmarket (*Literary Institution*).  
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 ——— (*South Wales Institute of Engineers*).  
 ——— (*Working Man's Institute*).  
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 Thornton Heath, Croydon (*Workmen's Club*).  
 Todmorden (*Mechanics' Institution*).  
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 ——— (*Institution*).  
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 Watford (*Literary Institute*).  
 ——— (*Public Library*).  
 Wellingborough (*Working Men's Club*).  
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 ——— (*Museum*).  
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 Whitehaven (*Mechanics' Institute*).  
 ——— (*Working Men's Reading Room*).

Whitstable (*Institute*).  
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 Winchester (*Mechanics' Institution*).  
 ——— (*Training College*).  
 Winsford (*Town Hall Reading Room*).  
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 Wisbeach (*Mechanics' Institute*).  
 Witham (*Literary Institution*).  
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 ——— (*Library*).  
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## Abridgments of Specifications.

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